PROVINCE OF KWAZULU-NATAL
DEPARTMENT OF TRANSPORT

OVERLOAD CONTROL REPORT
2022/23 Financial Year

PREPARED BY:

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Executive Summary

Introduction:

This report presents important statistics on the vehicle weighing activities of the KwaZulu-Natal Department of Transport during the 2022/23 financial year and makes comparisons with weighing in previous years. Electronic weigh data is available since 1988, making it possible to evaluate thirty-five years of time series data and identify long-term trends.

The overload data is analysed on a monthly and an annual basis using the Vehicle Overloading Management System (VOMS), developed by the CSIR. VOMS has been utilised to analyse the province's weigh data since 1988 and is updated on an on-going basis to meet the needs of the Department.

Key Indicators:

Indicator	Unit	2020/21	2021/22	2022/23	Change from 2021/22 to 2022/23
Vehicles weighed	No	79 179	264 318	286 356	+8%
Extent of Overloading:					
Vehicles weighed that were overloaded	%	20.7	25.2	25.8	+2%
Degree of Overloading:					
Vehicles weighed that were chargeable	%	2.6	2.8	3.0	+7%
Overloaded vehicles overloaded by less than the tolerance	%	87.4	89.0	88.3	-1%
Overloaded vehicles overloaded by more than the tolerance	%	12.6	11.0	11.7	+6%
Average overload per overloaded vehicle	kg	616	561	569	+1%
Average overload for axle overloads (Reg. 234/235)	kg	606	531	522	-2%
Average overload for vehicle/combination overloads (Reg. 236/237)	kg	646	567	587	+4%
Average overload per single axle (9 000 kg)	kg	953	870	825	-5%
Average overload per tandem axle unit (18 000 kg)	kg	522	495	495	-0%
Average overload per tridem axle (24 000 kg)	kg	552	533	540	+1%
Vehicles overloaded by less than 1 000 kg	%	88.1	89.5	88.8	-1%
Vehicles overloaded by less than 2 000 kg	%	96.2	97.4	97.0	-0%

KEY		WORSENED	LITTLE CHANGE	IMPROVED

General Weighing Statistics:

During the financial year 2022/23, 286 356 vehicles were weighed at the KwaZulu-Natal Department of Transport's weighbridges of which 73 802 (25.7%) were overloaded and 8 653 (3%) chargeable. On a monthly basis, the percentage of overloaded vehicles varied between 23.7% and 28.6%, while the percentage of vehicles chargeable varied between 3.8%

and 2.6%.

It also means that 212 554 (74.2%) legally loaded vehicles were weighed, emphasizing the need for better screening of heavy vehicles before sending them to a weighbridge. The focus of weighing should not be on the number of vehicles weighed, but rather on the number of overloaded vehicles weighed and charged. In other words, the focus must be on the quality of operations at the weigh stations, rather than on quantity.

The number of vehicles weighed in 2022/23 represent an 8% increase compared with the 264 318 vehicles weighed during 2021/22. The 286 356 vehicles weighed in 2022/23 are the highest number of vehicles weighed in a year. The previous highest number was 264 318 vehicles weighed in 2021/22. The number of vehicles overloaded increased slightly from 66 683 in 2021/22 to 73 802 in 2022/23, while the number of vehicles chargeable increased from 7 354 in 2021/22 to 8 653 in 2022/23.

169 668 vehicles (59.3%) were weighed on the N3 corridor. Of these, 34 150 (20.1%) were overloaded and 3 468 (2%) chargeable. In comparison, for the remainder of the province (primarily the N2 corridor), 34% of the vehicles weighed were overloaded and 4.4 % were chargeable.

Weighing Statistics Relative to the Prosecution Tolerances:

Prior to 1990, less than 10% of the overloaded vehicles were overloaded within the tolerance, indicating that most of the overloaded vehicles were overloaded to a high degree. This situation has changed over the years and in 2022/23, the percentage of vehicles overloaded within the tolerance slightly decreased to 88.3% from 89% in 2021/22. This is an indication that operators utilise to the tolerance of 2% on total vehicle or combination mass to maximise vehicle payloads. The additional payload that can be loaded is however restricted to a maximum of 1 120 kg (2% of 56 000 kg), where previously it was restricted to a maximum of 2 800 kg (5% of 56 000 kg).

Enforcement at Individual Weighbridges:

There are 17 provincial weighbridge sites in KwaZulu-Natal, of which 16 were operational in 2022/23. The most vehicles weighed at a single weighbridge were 67 766 vehicles at Mpofana, with an average of 5 647 vehicles weighed per month. This is 5% lower than the monthly average of 5 961 vehicles that were weighed per month at Mpofana in 2021/22. The lowest number of vehicles weighed was 4 734 vehicles at Greytown, representing an average of 395 vehicles per month. The lowest monthly average of 395 vehicles in 2022/23 is higher than the lowest monthly average for 2021/22, which was recorded at the Empangeni weighbridge.

The average overload per overloaded vehicle for 2022/23 at Groutville is significantly higher than that of the other weighbridges, suggesting that the level of enforcement should be increased in the area surrounding this weighbridge.

Overload Monitoring Using Weigh-in-Motion Equipment

Weigh data from permanent weigh-in-motion sites on key provincial routes shows the extent of vehicles overloaded by more than the prosecution tolerance ranged from 2% to 22.9% in 2021/22, with a weighted average of 11.3%. In 2022/23, these overloads ranged from 1.8% to 24.2%, with a weighted average of 10.6%. The comparable statistics as recorded at the weighbridges were 11% in 2021/22 and 11.7% in 2022/23.

Conclusions:

Through the continuous efforts of the KwaZulu-Natal Department of Transport, the heavy vehicle overload situation in KwaZulu-Natal has improved considerably over the years. The extent of overloading, i.e., the number of vehicles that are overloaded, has reduced from a high of 43% of all vehicles weighed in 1998 to around 25% currently. The extent of overloading has remained at around 18% since 2006 and started to increase from 2020/21 till 2022/23.

On key provincial roads monitored with permanent HSWIM sites, the extent of vehicles overloaded by more than the prosecution tolerance ranged from 1.8% to 24.2%, with a weighted average of 10.6%. The comparable statistics recorded at the 16 weighbridges was 11% in 2021/22 and 11.7% in 2022/23. The extent of overloading on these secondary routes are on average slightly lower than the extent as measured at the weighbridges in 2022/23.

Too many legal loads are being weighed unnecessarily and not enough use of the screeners is being made. The weigh data also reflects that very limited weighing happens between 18:00 and 06:00. In the interest of curbing overloading, this matter should be addressed.

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1. INTRODUCTION

Road and rail are the predominant means of freight transport in South Africa. Growth in the movement of freight in South Africa over the years has been significant, and in recent years, most of the growth in land freight has been captured by road. According to Statistics SA, the volume of goods transported (payload) in South Africa increased by 9.2% from May 2021 to May 2022 and in terms of pay load (tons) roads continue to carry the bulk of freight – 80.5% compared to 19.5% carried by rail.

The road network is facing gradual degradation due to the underlying shortcomings of the system. In a 2014 COTO report[1], the backlog on road maintenance (strengthening or rehabilitation) for the entire South African paved road network is estimated at about R 161 billion of which R 19 billion is needed for SANRAL roads; R 130 bn for provincial roads; R 8.3 bn for metro roads; and R 4.1 bn for other municipal roads. These backlog amounts do not include routine maintenance backlogs and only some periodic maintenance backlogs.

Research undertaken by the University of Cape Town (UCT) School of Economics academics Don Ross and Matthew Townshend, presented at the South African Transport Conference, on 8 July 2019[2], found that the cost of South Africa's road maintenance backlog is nearing R 417 billion.

The limited funds available for the construction of new roads and for road maintenance make it essential that axle and vehicle mass regulations are effectively enforced throughout South Africa to protect the country's road network.

The KwaZulu-Natal Department of Transport (the Department) identified this need several years ago and, a strategy for vehicle overload control was formulated during 1998 for the Department by the CSIR. This overload control strategy has been implemented in phases since January 2000 and currently the Department is operating 16 weighbridges throughout KwaZulu-Natal. A 17th weighbridge, at Newcastle, has not been operational since 2016.

This report presents statistics on the vehicle weighing activities of the Department during the 2022/23 financial year and makes comparisons with weighing in previous years. This report is the sixth report that has been prepared to coincide with the Department's financial year. Previous reports were done per calendar year, but on request of the Department, annual reports are now being done per financial year. To allow comparisons with previous years, the weighing statistics for the years 2015, 2016 & 2017 have been reworked and are presented per financial year for 2015/16 and 2016/17, while 2014 and older statistics are still presented per calendar year. The weighing process has been computerised since 1988, making it possible to evaluate thirty-five years of time series data and identify long-term trends. The

[1] South African Road Network Condition and Budget Needs 2014 (Report compiled under auspices of the Roads Coordinating Body (RCB) for the Committee of Transport Officials (COTO) and published by SANRAL)

[2] Ross, D and Townshend, M. The Road Maintenance Backlog in South Africa. 8th Annual Southern African Transport Conference, 2019.

overload data is analysed monthly and annually using the CSIR Vehicle Overloading Management System (VOMS). VOMS has been utilised to analyse the province's weigh data since 1988 and is updated on an on-going basis to meet the needs of the Department.

2. GENERAL WEIGHING STATISTICS

During the financial year 2022/23, **288 982** vehicles were processed through the normal weighing procedures at the KwaZulu-Natal traffic control centres (TCCs). This number includes abnormal vehicles (AV). The numbers excluding AV are **286 356** vehicles weighed, **73 802** vehicles overloaded and **8 653** vehicles chargeable[1].

The 286 356 vehicles weighed during 2022/23 is an increase of 22 038 vehicles or 8% compared with 2021/22. The 288 982 vehicles weighed in 2022/23 are the most vehicles weighed in a year since 2007, while the lowest number is 79 179 vehicles weighed in 2020/21.

73 802 (25.8%) vehicles weighed were overloaded in terms of the legal limit, which is 11% higher compared with the 66 683 (25.2%) overloaded vehicles in 2021/22. 8 653 (3%) vehicles were chargeable, which is 18% higher compared with the 7 354 (2.8%) vehicles chargeable in 2021/22.

The number of vehicles weighed, overloaded and chargeable per month during 2022/23 are presented in Figure 2-1 and Table 2-2. Also shown in Figure 2-1 are the percentage vehicles overloaded and the percentage vehicles chargeable per month. On a monthly basis, the percentage of overloaded vehicles varied between 23.7% and 28.6%, while the percentage of vehicles chargeable varied between 2.6% and 3.8%.

The annual statistics from 2008 to 2022/23 are presented in Table 2-1 and Figure 2-2. Included in Figure 2-2 are the percentage vehicles overloaded and the percentage vehicles chargeable per year, indicating that the percentage of vehicles overloaded stabilised at around 18% until 2017/2018, with an upward trend since then. The 2.6% of vehicles chargeable in 2019/2020 was the lowest percentage since 2005 but shows a slight upward trend since 2021/22.

During 2022/23, the number of vehicles weighed per month varied from a minimum of 19 824 vehicles in April 2022 to a maximum of 28 474 vehicles in August 2022. The minimum is higher than the minimum of 14 392 in 2021/22 and the maximum value is less than the equivalent value of 29 621 for 2021/22.

[1] The term “chargeable” refers to vehicles that exceed the tolerance (a prosecution guideline) applied to all the mass limits. If the mass of an axle, axle unit, vehicle or combination of vehicles exceeds one of the legal limits, the vehicle is overloaded, but the driver/operator only be prosecuted (charged) if a tolerance limit is exceeded.

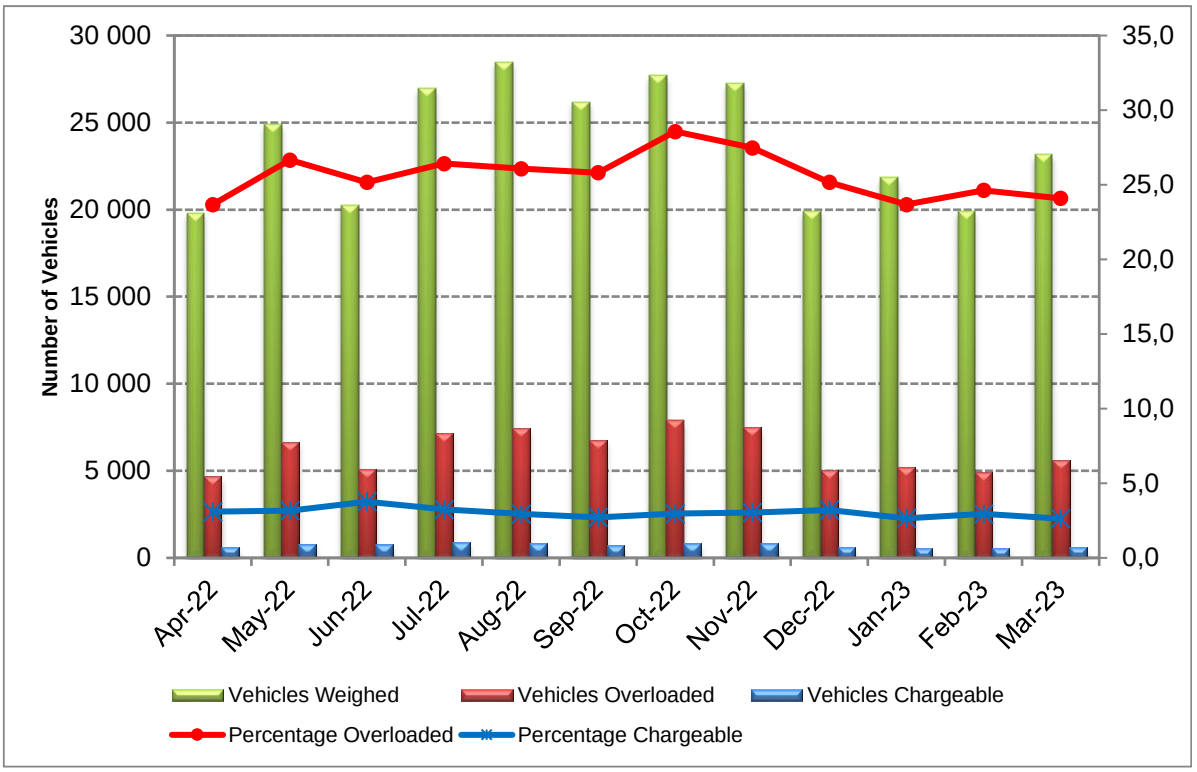

Figure 2-1: Number of vehicles weighed, overloaded and chargeable: April 2022 to March 2023

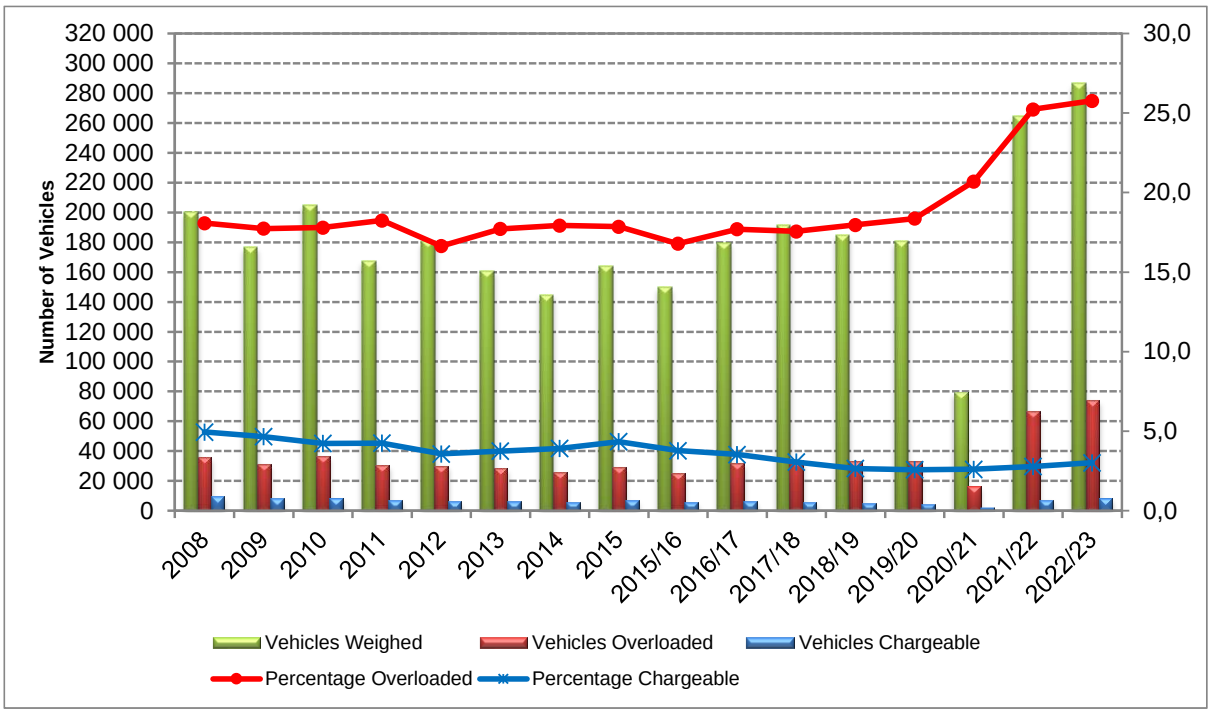

Figure 2-2: Numbers of vehicles weighed, overloaded and chargeable: 2008 to 2022/23

Table 2-1: Number of vehicles weighed, overloaded and chargeable: 2008 to 2022/23

Year	Vehicles weighed	Vehicles Overloaded	Vehicles chargeable	Percentage overloaded	Percentage chargeable
2008	200 030	36 177	9 901	18.1%	4.9%
2009	176 739	31 352	8 238	17.7%	4.7%
2010	204 589	36 429	8 661	17.8%	4.2%
2011	167 215	30 521	7 115	18.3%	4.3%
2012	180 764	30 075	6 464	16.6%	3.6%
2013	160 836	28 502	6 036	17.7%	3.8%
2014	144 833	25 974	5 677	17.9%	3.9%
2015	164 052	29 301	7 126	17.9%	4.3%
2015/16	149 633	25 123	5 661	16.8%	3.8%
2016/17	179 655	31 795	6 360	17.7%	3.5%
2017/18	191 734	33 677	5 879	17.6%	3.1%
2018/19	185 006	33 222	4 921	18.0%	2.7%
2019/20	180 541	33 156	4 661	18.4%	2.6%
2020/21	79 179	16 388	2 063	20.7%	2.6%
2021/22	264 318	66 683	7 354	25.2%	2.8%
2022/23	**286 356**	**73 802**	**8 653**	**25.8%**	**3.0%**

Table 2-2: Number of vehicles weighed, overloaded and chargeable: April 2022 to March 2023

Month	Vehicles weighed	Vehicles overloaded	Vehicles Chargeable	Percentage Overloaded	Percentage chargeable
Apr 22	19 824	4 694	613	23.7%	3.1%
May 22	24 896	6 637	788	26.7%	3.2%
Jun 22	20 232	5 092	762	25.2%	3.8%
Jul 22	26 954	7 123	874	26.4%	3.2%
Aug 22	28 474	7 425	838	26.1%	2.9%
Sep 22	26 179	6 758	711	25.8%	2.7%
Oct 22	27 705	7 916	823	28.6%	3.0%
Nov 22	27 264	7 491	830	27.5%	3.0%
Dec 22	19 919	5 012	639	25.2%	3.2%
Jan 23	21 841	5 171	580	23.7%	2.7%
Feb 23	19 894	4 899	586	24.6%	2.9%
Mar 23	23 174	5 584	609	24.1%	2.6%

Note: red figures represent minimum values and blue represents maximum values.

Electronic weigh data is available since 1988, making it possible to evaluate thirty five years of time series data and identify long-term trends. Figure 2-3 shows the number of vehicles weighed and overloaded per month from January 1988 to March 2023 (423 months). Figure 2-4 shows the number of vehicles weighed and overloaded per financial year for 35 years from 1988 to 2022/2023. Over these 35 years, 4 508 517 vehicles were weighed, of which 1 013 434 or 22% were overloaded.

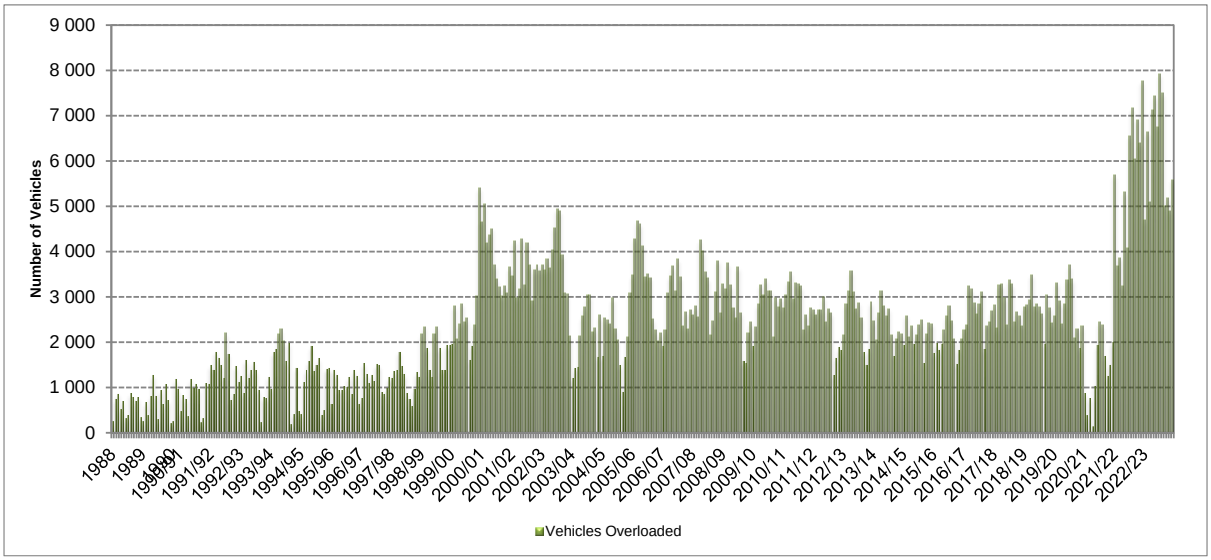

Figure 2-3: Vehicles overloaded per month: January 1988 to March 2023

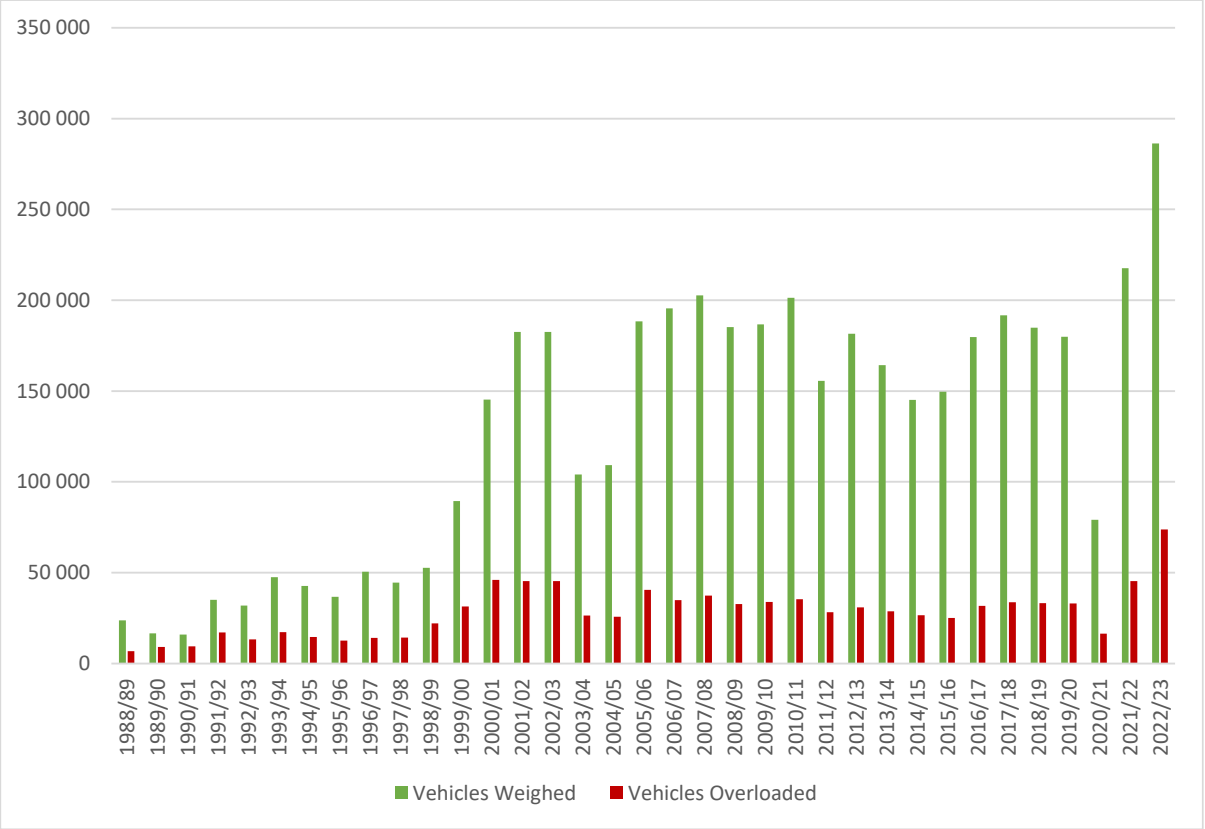

Figure 2-4: Vehicles weighed and overloaded per year: 1988/89 to 2022/2023

3. ENFORCEMENT AT INDIVIDUAL WEIGHBRIDGES

The vehicle weighing activities at each of the 17 weighbridge sites in KwaZulu-Natal during 2022/23 are presented graphically in Figure 3-3-1 and summarised in Table 3-1. The locations of the 17 weighbridges are shown on the map in Appendix A. Please note that the Mpofana weighbridge has only been operating since 2016/17 and Eteza data was only included for the financial years 2021/22 & 2022/23 and therefore both weighbridges have less historical data.

The most vehicles weighed at a single weighbridge was 67 766 vehicles at Mpofana weighbridge, representing an average of 5 647 vehicles per month. Mpofana was also the weighbridge where the most vehicles were weighed in 2021/22. The monthly average of 5 647 vehicles in 2022/23 is 5% lower than the Mpofana monthly average of 5 962 vehicles during 2021/22. The lowest number of vehicles weighed was 4 734 vehicles at Greytown, representing an average of 395 vehicles per month. The monthly average of 395 vehicles in 2022/23 is higher than the lowest monthly average recorded in 2021/22.

The percentage of vehicles overloaded varies from a maximum of 46.1% at One Tree Hill to a minimum of 9% at Greytown, while the percentage of vehicles chargeable varies from a maximum of 8.4% at Groutville to a minimum of 1.1% at Midway.

Of the 286 356 vehicles weighed in 2022/23, 169 668 (59%) were weighed on the N3 corridor. Of these, 34 150 (20.1%) were overloaded and 3 468 (2%) chargeable. In comparison, with the remainder of the province (primarily the N2 corridor) 34% of the vehicles weighed were overloaded and 4.4% were chargeable.

The Newcastle weighbridge did not operate during the 2022/23 financial year.

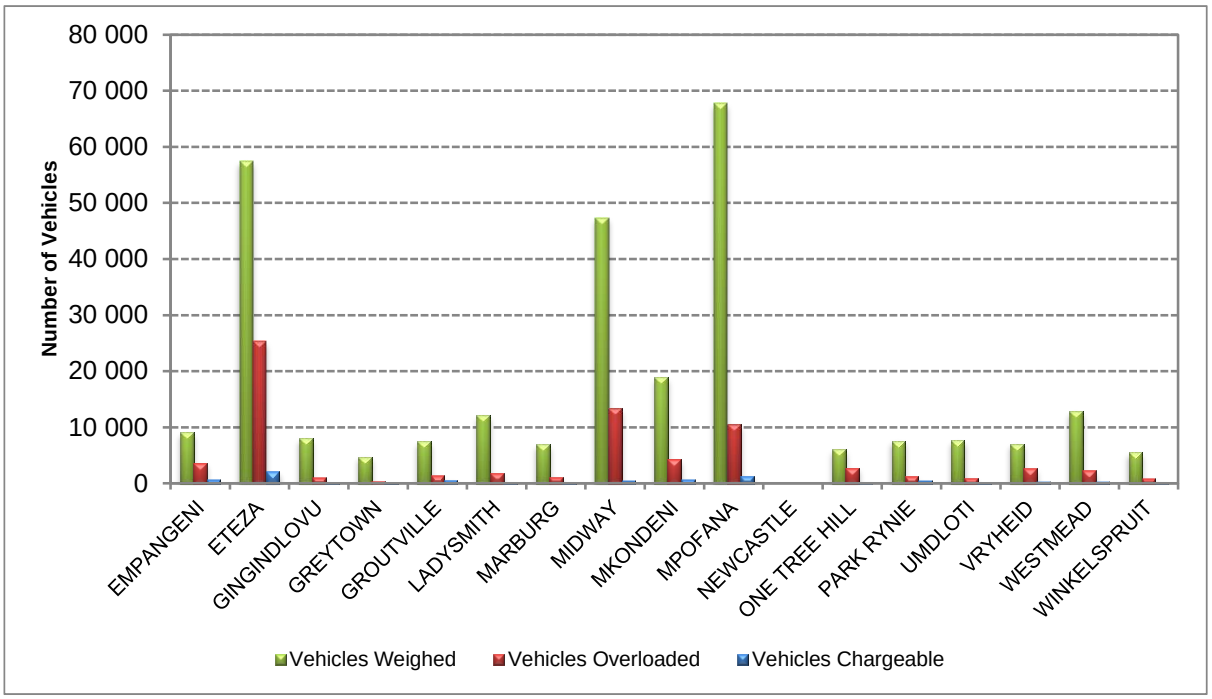

Figure 3-3-1: Number of vehicles weighed, overloaded and chargeable per weighbridge in 2022/23

Table 3-1: Individual weighbridge statistics: 2022/23

No.	Locality	Number of Vehicles Weighed	Number of Vehicles Overloaded	Percentage Overloaded	Average Overload (kg)	Number of Vehicles Chargeable	Percentage Chargeable
1	Empangeni	9 055	3 632	40.1%	742	658	7.3%
2	Eteza	57 351	25 258	44%	499	2 088	3.6%
3	Gingindlovu	8 041	1 041	12.9%	664	208	2.6%
4	Greytown	4 734	428	9%	995	147	3.1%
5	Groutville	7 447	1 398	18.8%	1 138	626	8.4%
6	Ladysmith	12 061	1 900	15.8%	536	231	1.9%
7	Marburg	6 895	1 162	16.9%	660	222	3.2%
8	Midway	47 330	13 361	28.2%	475	508	1.1%
9	Mkondeni	18 856	4 263	22.6%	736	715	3.8%
10	Mpofana	67 766	10 531	15.5%	527	1 337	2%
11	Newcastle	*Did not operate*					
12	One Tree Hill	6 026	2 775	46.1%	529	245	4.1%
13	Park Rynie	7 566	1 277	16.9%	849	477	6.3%
14	Umdloti	7 676	1 002	13.1%	700	206	2.7%
15	Vryheid	7 060	2 625	37.2%	701	346	4.9%
16	Westmead	12 895	2 257	17.5%	646	354	2.7%
17	Winklespruit	5 597	892	15.9%	773	285	5.1%
	TOTAL	**286 356**	**73 802**	**25.8**	**572**	**8 653**	**3.0%**

Note: red figures represent minimum values and blue represents maximum values.

4. OVERLOAD MONITORING USING WEIGH-IN-MOTION EQUIPMENT

In KwaZulu-Natal there is extensive overload control on the national roads (N3 and N2), while overload control on the provincial road network is not at the same level. To monitor the overload situation on key provincial routes, the KwaZulu-Natal Department of Transport have installed permanent weigh-in-motion (WIM) sites and uses portable WIM scales on alternative routes to randomly measure overload trends.

The data from the permanent WIM sites for 2021 and 2022 are summarised in Table 4-1, showing that the extent of overloading on these provincial roads varied from 2% to 22.9% with a weighted average of 11.3% in 2021, compared to 1.8% to 24.2% with a weighted average of 10.6% in 2022. The percentage of vehicles overloaded in Table 6-1 refers to vehicles overloaded above the legal limit.

Table 4-1: Permanent WIM sites statistics: 2021 and 2022

Place	Station	Route	2021			2022		
			ADT	ADTT	%OL	ADT	ADTT	%OL
Thornville	**1106**	**R56**	8 087	615	15.1	8 205	571	14.5
Eston	**1103**	**R603**	3 036	324	10.7	2 079	108	6.2
Merrivale	**1264**	**R617**	10 783	705	9.6	10 529	607	10.2
Balgowan North	**1267**	**R103**	4 597	376	3.3	4 681	408	3.2
KwaDukuza	**1268**	**R74**	9 225	446	10.5	9 162	356	10.2
Utrecht	**3601**	**R34**	2 948	496	18.8	3 123	470	18.5
Bergville	**3602**	**R74**	3 202	392	10.8	3 181	366	11.3
Brackenham	**1271**	**R231**	13 966	2 246	7.2	14 058	2 253	10.5
Gingindlovu	**1107**	**R66**	6 080	665	6.5	6 089	539	8.6
Steelbank NB	**3607**	**M13**	50 322	2 691	12.7	50 302	2 555	13.5
Shongweni West SB	**1416**	**M13**	19 445	1 158	2	19 098	1 069	1.8
Bayhead RD NB	**1465**	**-**	8 036	4 576	18	7 636	4 479	24.2
Bayhead RD SB	**3610**	**-**	7 562	4 537	22.9	7 368	4 479	8.2
M4 NB	**3604**	**M4**	9 339	224	7	9 867	191	6.6
M4 SB	**3605**	**M4**	7 945	354	13.7	8 369	238	11.4

5. MAXIMUM OVERLOADS

The fifteen highest overloads for 2022/23 are listed in Table 5-1, showing that 8 of the highest overloads in 2022/23 were above 20 tonnes. In 2021/22 there were 10 overloads above 20 tonnes.

The limiting factor in terms of the permissible maximum combination mass for these 15 highest overloads are as follows:

Regulation 237.1 (56 000 kg limit):	5
Regulation 239.1.b (Gross combination mass):	3
Regulation 237.2.a (Sum of permissible axle/axle unit masses):	3
Regulation 239.2.b (Engine power)	1
Regulation 236.2.a (Sum of permissible axle/axle unit masses):	1
Regulation 239.3 (5 times the mass on the drive axle):	1
Regulation 239.1.a.i (Gross vehicle mass):):	1

The aim of Regulation 239.3, which states that the total vehicle or combination mass may not be more than five times the mass on the drive axle, is road safety and not the protection of the road. Overloads in terms of Regulation 239.3 is usually caused by incorrect load distribution. Regulation 239.2.b, which states that the total vehicle or combination mass may not be more than 240 times the power rating of the engine of the draw vehicle, is also aimed at road safety, rather than protection of the road.

Table 5-1: Fifteen maximum overloads: 2022/23

No.	Regulation	Vehicle Class	Overload (kg)	Company	Cargo	Locality
1	239.3	1222	**30 960**	K&N Freightlines		Mkondeni
2	239.1.b	1222	**28 180**	Grain Carriers	Wheat	Westmead
3	239.2.b	1222	**28 100**	Van Tonder	Maize	Mkondeni
4	239.1.b	1222	**23 640**	NST Transport	Crome	Vryheid
5	237.1	1222	**22 380**	Enasni Express	Containers	Mkondeni
6	237.1	1222	**21 680**	Shipping And General	Containers	Mkondeni
7	237.1	1222	**21 400**	Forum Sa	Containers	Mkondeni
8	237.1	1232	**20 960**	Freight World Logistics	Cargo Containers	Mkondeni
9	237.1	1232	**19 440**	DAC	Steel Plates	Mpofana
10	239.1.b	223	**19 100**	Umhlali Quarry	Concrete Stone	Groutville
11	237.2.a	222	**18 140**	CHS	Crane	Groutville
12	239.2.b	1222	**18 040**	Jumbo	Rice	Marburg
13	237.1	1232	**17 560**	Transport.Com	Container	Mpofana
14	239.1.a.iii	22	**17 200**	Crossmore	Tar	Greytown
15	237.1	1233	**16 840**	SG	Duff	Eteza

6. COMPANY STATISTICS

Vehicles from 20 886 different companies were weighed during 2022/23. 13 516 companies had only one vehicle weighed per company while a further 5 674 had more than one but less than 10 vehicles weighed per company. Seven companies had more than 1 000 vehicles weighed, with 3 646 being the most vehicles weighed for a single company. For 129 405 vehicles, the name of the company was recorded as “Not Provided” and 6 271 vehicles the company name was recorded as “Private Operator”. In terms of overloaded vehicles, 13 334 companies had no overloaded vehicles weighed. This represents 63.8% of all the companies.

In terms of vehicles overloaded by more than the prosecution tolerances, 17 421 companies (83.4%) had no vehicles in this category, while a further 874 companies (4.2%) had more than one but less than 10 overloaded vehicles in this category. 304 vehicles and 207 vehicles, for which the company name was “Not Provided and Private Operator, were overloaded by more than the prosecution tolerances. It thus appears as if these 511 vehicles were not fined for being overloaded.

There were 4 087 companies with vehicles all overloaded within the tolerance limits. These companies are using the tolerance for extra payload but managing it carefully to not exceed the allowable tolerance.

To identify the worst offending companies, a Company Overload Number (CON) is calculated for each company, based on the degree and extent of overloading by the company and the impact of the company in terms of overloading. Companies should be encouraged to load their vehicles optimally, i.e., as close to the legal limit as possible, as this should reduce the number of vehicles required to transport the total tonnage of freight per annum. A company aiming to load optimally would occasionally exceed the legal limits and could therefore be classified as a frequent over loader, especially if it is an operator with many vehicles on the road. The CON is therefore calculated in such a manner as not to penalise the companies aiming to optimise the loading of their vehicles, but rather to identify those companies that overload their vehicles in excess of the tolerance limits on a regular basis.

The Company Overload Number is calculated using the following formula:

$$CON = (DxE)^{I}$$

where D = ***D****egree of overloading;*
Expressed as the overloaded mass on the overloaded vehicles as a percentage of the legal mass of the overloaded vehicles.

E = ***E****xtent of overloading;*
Expressed as the number of vehicles overloaded in excess of the tolerance limits as a percentage of the total number of vehicles weighed.

I = ***I****mpact of company;*
Expressed as the log of the number of vehicles overloaded in excess of the

tolerance limits.

The twenty companies with the highest CON are listed in Table 6-1.

Table 6-1: Twenty worst offenders: 2022/23 (in terms of Company Overload Number)

Company name	Vehicles Weighed	Vehicles overloaded	Percentage overloaded	Vehicles chargeable	Percentage chargeable	Company Overload Number
Vector Logistics Solutions	289	121	41.9%	96	33.2%	**48 964**
Scribante	11	10	90.9%	10	90.9%	**1273**
Aqua Bulk	311	100	32.2%	46	14.8%	**919**
Forum SA	101	23	22.8%	20	19.8%	**885**
NST Transport	240	171	71.2%	48	20%	**624**
Northwest Bulk Carriers	173	132	76.3%	51	29.5%	**573**
Triple A Beef	136	39	28.7%	23	16.9%	**562**
Evan Grass	14	8	57.1%	8	57.1%	**546**
Como Transport	87	60	69%	31	35.6%	**536**
Umhlali Quarry	20	9	45%	9	45%	**507**
Phoenix Cash and Carry	73	23	31.5%	18	24.7%	**465**
Gold Star	34	14	41.2%	14	41.2%	**357**
Trucking	1 661	202	12.2%	93	5.6%	**311**
DAC	55	17	30.9%	12	21.8%	**273**
NWB	439	303	69%	73	16.6%	**263**
Grindrod	459	105	22.9%	40	8.7%	**249**
River North Carriers	527	298	56.5%	69	13.1%	**239**
Tradeport	183	41	22.4%	22	12%	**186**
Diogrande	24	21	87.5%	13	54.2%	**185**
Westmead Carriers	493	74	15%	37	7.5%	**183**

Seven of the companies listed in Table 6-1 (highlighted in blue) also appeared on the 20 worst offenders list in the 2021/22 report.

It is once again recommended that the CEOs of the companies listed in Table 6-1 be approached with a view to promote improved compliance in future.

7. CONCLUSIONS

Through the continuous efforts of the KwaZulu-Natal Department of Transport, the heavy vehicle overload situation in KwaZulu-Natal in terms of the extent and degree of overloading has stabilised since 2006.

The 286 356 vehicles weighed in 2022/23, are the most vehicles weighed in a year since 2008., while the lowest number was in 2020/21, when 79 179 vehicles were weighed. This was due to the Covid 19 pandemic when the country went on a complete shut down and weighbridges stopped operating.

The extent of overloading showed a peak in 1998, when 43% of all vehicles weighed were overloaded, but has decreased since then to around 25%. In 2012, 16.6% of all vehicles weighed were overloaded, the lowest recorded extent of overloading since 1993. 25.2% of all vehicles weighed were overloaded in 2021/22 but increased to 25.8% in 2022/23.

The extent of overloading on the N3 corridor is lower than that of the rest of the province, with 20.1% of the vehicles weighed on the N3 corridor being overloaded compared with the 34% for the rest of the province (primarily the N2 corridor).

On key provincial roads monitored with permanent HSWIM sites, the extent of vehicles overloaded by more than the prosecution tolerance during 2022 ranged from 1.8% to 24.2%, with a weighted average of 10.6%. The comparable statistics recorded at the 16 operational weighbridges were 11% in 2021/22 and 11.7% in 2022/23.

In terms of the degree of overloading, there are several indicators showing that this has stabilised. The percentage of vehicles chargeable has been decreasing steadily from a peak of 24% in 1998 to 3% in 2022/23.

Another indication of the stabilisation in the degree of overloading is the percentage of overloaded vehicles that are overloaded within the tolerance limits as opposed to the percentage overloaded by more than the tolerance limit. Prior to 1990, less than 10% of the overloaded vehicles were overloaded within the tolerance, indicating that most of the overloaded vehicles were overloaded to a high degree. This situation has changed and in 2022/23, the percentage of vehicles overloaded within the tolerance stands at 88.3%. This is an indication that most operators have adjusted to the lower tolerance of 2% on total vehicle or combination mass and is once again utilising the tolerance to maximise vehicle payloads. The additional payload that can be loaded is however restricted to a maximum of 1 120 kg (2% of 56 000 kg), where previously it was restricted to a maximum of 2 800 kg (5% of 56 000 kg).

The various annual average overload statistics also indicate a stabilisation in the degree of overloading. There was a steady downward trend in the average overload per overloaded vehicle from 2 083 kg in 1997 to 569 kg in 2022/2023. The annual average overload in contravention of Regulation 234/5 (permissible maximum axle and axle unit masses) is

currently around 522 kg, down from 769 kg in 2008. The annual average overload in contravention of Regulation 236/237 (permissible maximum vehicle/combination mass) has decreased from 827 kg in 2008 and is currently around 587 kg. The reduction of the average overload in contravention of Regulations 236 and 237 can be ascribed to the continuous impact of the lowering of the prosecution tolerance from 5% to 2% in 2006.

The final indicator of the stabilisation in the degree of overloading is the distribution of vehicle overloads. Since 1998, the percentage of overloaded vehicles in the 0 to 2 000 kg range has increased significantly, while the percentage of overloaded vehicles in the greater than 2 000 kg range has shown a marked decrease. The percentage of overloaded vehicles overloaded by less than one tonne has increased from 10% in 1990 to 88% in 2022/23. During the same period, the percentage of overloaded vehicles overloaded by less than 2 tonnes increased to 97%. This is a clear indication that the degree of overloading has reduced. This correlates with the increase in the number of overloaded vehicles within the prosecuting tolerance.

An analysis of the weigh data per transport operator confirms that there are still companies clearly disregarding the National Road Traffic Act with respect to the mass regulations by continuing to implement policies of deliberate overloading. As in previous years, it is recommended that the CEOs of these companies be approached by the Department with a view to taking serious actions if their overloading practices continue. The correct recording of company names remains a problem and should be addressed with the staff at the weighbridges.

Appendix A. Map showing weighbridge sites in KwaZulu-Natal.