



Emerging Good Practice in Overload Control in Eastern and Southern Africa

Selected Case Studies

Michael Ian Pinard



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Sub-Saharan Africa Transport Policy Program

The SSATP is an international partnership to facilitate policy development and related capacity building in the transport sector in Sub-Saharan Africa.

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Foreword

This is the third in a series of three publications that the SSATP is releasing on vehicle overload control in Eastern and Southern Africa. The first two volumes presented a concise synthesis of the vehicle overload problem in the region and guidelines on developing sound and sustainable control regimes. Those volumes were based on lessons learnt from experiences with overload controls in Botswana, Namibia, South Africa, Zambia and Zimbabwe where good practices are emerging. Given the importance of learning from the successful practices, this volume presents more detail on each of the case studies.

The case studies offer different but complementary lessons, namely, cooperation between neighboring countries in designing overload control systems for cross-border traffic (Botswana/South Africa case study), developing and implementing a progressive strategy for overload control (Namibia), introducing private operation of weighbridges and self-regulation of vehicle loading (South Africa), designing a process-related vehicle axle load control program (Zambia) and decriminalizing overload control (Zimbabwe). Between them, the case studies cover some of the most critical elements of progressive approaches to vehicle axle load control regimes.

This ground breaking compendium by the SSATP derives from a realization of the scale of the vehicle overloading problem in Sub-Saharan Africa. Unless the problem is tackled properly, it will negate the benefits from the significant improvements in core road infrastructure networks across much of the continent. The case studies show that it is possible to

have effective control regimes in place, which are supported by and benefit both the public and private sector operators.

This document, like the other two, is a product of the SSATP partnership between Regional Economic Communities (COMESA, EAC, SADC), international bodies (UNECA, USAID, World Bank), private sector associations (FESARTA), and country experts. These parties provided critical inputs to a team of experts which compiled the case studies. The case studies were then used as an input into the drawing of regional guidelines on vehicle overload control. As is usual with such seemingly difficult subjects, learning from the lessons offered here will require serious commitment, support and follow-up from these various parties. The case studies clearly show that the problem of vehicle overloading is not insurmountable; it can be tackled successfully with the right mix of approaches, players, deterrents and incentives.

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Acronyms and abbreviations

AASHO	American Association of State Highway Officials
ACC	Anti Corruption Commission
ASANRA	Association of Southern Africa National Roads Authorities
AU	African Union
BOT	Built Operate and Transfer
CBOCS	Cross Border Overload Control System
CBRTA	Cross-Border Road Transport Agency
COMESA	Common Market for East and Southern Africa
CPC	Corridor Planning Committee
CSIR	Council for Scientific and Industrial Research
ESA	Equivalent Standard Axle
DoCS	Department of Community Safety
DoT	Department of Transport
EAC	East African Community
ECA	Economic Commission for Africa
ECOWAS	Economic Community for Central African States
ESA	Eastern and Southern Africa
FCWG	Five Country Working Group
FESARTA	Federation of East and Southern African Road Transport Associations
GCM	Gross Combination Mass
GVM	Gross vehicle mass
HGV	Heavy Goods Vehicle
HSWIM	High Speed Weigh-in-Motion
LAP	Load Accreditation Program
LSWIM	Low Speed Weigh-in-Motion
MLP	Model Legislative Provisions

MoU	Memorandum of Understanding
MTEF	Medium Term Expenditure Framework
NAD	Namibian dollar
NDoT	National Department of Transport
NEPAD	New Partnership for Africa's Development
NHVAS	National Heavy Vehicle Accreditation Scheme
NPRA	Norwegian Public Road Administration
NQF	National Qualification Framework
OCMI	Overload Control Management Initiative
PBS	Performance Based System
PGWC	Provincial Government -, Western Cape
PPP	Public Private Partnership
PTA	Preferential Trade Area
R	Rand
RA	Road Authority
RDA	Road Development Agency
REC	Regional Economic Community
RESOC	Regional System of Overload Control
REVOCA	Regional Vehicle Overloading Control Association
RTMS	Road Transport Management System
RTMS	Road Transport Management System
SADC	Southern African Development Community
SANRAL	South African National Roads Agency Limited
SATCC	Southern Africa Transport and Communications Commission
SCOM	Standing Committee
SSA	Sub-Saharan Africa
SSATP	Sub-Saharan Africa Transport Policy Program
TTC	Traffic control centre
VELAC	Vehicle Loading Advisory Committee
VLM	Vehicle load monitor
VOCWG	Vehicle Overloading Control Working Group
VOMS	Vehicle Overloading Management System
vpd	Vehicles per day
WCC	Weighbridge Clearance Certificate
VSAT	Very Small Aperture Terminal
WIM	Weigh-in-Motion

Map of main transport corridors in ESA



Introduction

Background

The Common Market for Eastern and Southern Africa (COMESA), Southern African Development Community (SADC) and the Southern Africa Office of the United Nations Economic Commission for Africa (UNECA) working under the Regional Economic Communities Transport Coordinating Committee (REC-TCC) established under the leadership of the Sub-Saharan Africa Transport Policy Program (SSATP) have identified vehicle overload control as one of the priority areas.

This paper is the third in a series of three publications dedicated to the overwhelming problem of overloaded vehicles damaging roads throughout Africa. The first paper presented the overall problem and related guidelines on developing sound and sustainable control measures based on lessons learned. These lessons learned captured in the second volume are from experiences collected in Namibia, Zambia, Zimbabwe, South Africa and Botswana, four countries where some good practices are emerging that could serve as a platform for wider replication in the Eastern and Southern Africa (ESA) region. The selection of these countries to be used as case studies was based on a previous survey carried out in some 18 countries representing four Regional Economic Communities (SADC, COMESA, ECOWAS and CEMAC).

Emerging good practices

A number of countries in the ESA region have embarked on aspects of good practice in overload control that are worthy of documentation for possible emulation by all countries. These examples include:

- Progressive strategy for overload control (as in Namibia)
- Process-related axle load control program (as in Zambia)
- Decriminalization of overload control (as in Zimbabwe)
- Privatization of weighbridge operations (as in the Western Cape, South Africa)
- Self-regulation of overload control (as with the timber industry in South Africa)
- Cross-border overload control system (as at the Botswana/South Africa border at Martin's Drift/Groblersbrug)

Key Messages from case Studies

Progressive strategy for overload control

The Namibia case study demonstrates a comprehensive strategy for overload control based on the trend-setting guidance provided in the *SADC Memorandum of Understanding on Vehicle Loading*¹. The only key element of the strategy not yet in place is the decriminalization of overloading offences. However, this issue is the subject of an on-going study recommending an infringement system in place of the more traditional prosecution system with has limited effectiveness.

The implementation of the overload control strategy has facilitated the control of the pavement consumption and resulted in improved road safety. There has been a significant reduction in the percentage of overloaded heavy vehicles from 369 percent in 1998 for overloads within and above the 5 percent tolerance to 10 percent in 2005.

The positive impact of developing and introducing a sound strategy on overload control has demonstrated in a quantitative manner the obvious benefits of adopting a structured approach to overload control in line with the *SADC Memorandum of Understanding on Vehicle Loading*.

Process-related axle load control program

The process-related axle load control program followed by Zambia is a holistic and integrated one, which has been implemented substantially over a four-year period. The new approach to overload control is based on a radical overhaul of the old approach and is largely in accordance with the

¹ This document, still in a draft format, is accessible from the SSATP website.

SADC MoU and the model legislative provisions on management of vehicle loading.

The important lessons learned by Zambia are that:

- The process of amending Part V of the Public Roads Act has been slow. This has affected progress on some other vital program components;
- The wide-ranging scope of the project requires more than the four-year period assumed for its implementation;
- Before starting the project, it is important to have ample time to develop the implementation plan and detailed yearly budgets;
- It is also important to have a fully operational accounting and financial management system in place before commencing implementation; and
- It would be advantageous to divide the project in to separate sub-projects, one for operation and one for investment, and run them separately with different time schedules.

Zambia is expected to start reaping the benefits of its process-related axle load control program in terms of a significant reduction in overloading in future.

Decriminalization of overload control

Zimbabwe has been able to greatly improve the effectiveness of its efforts to curb the practice of overloading by decriminalizing overloaded vehicle and introducing administrative adjudication procedures to deal with infringements of the legal weight limits. The country imposed stiff fees for movements of apprehended overloaded vehicles, and generally required on-the-spot off-loading of excess weight. This resulted in a significant reduction in the incidence of overloading which is now below 3 percent at border posts compared with more than 40 percent before decriminalization of offences.

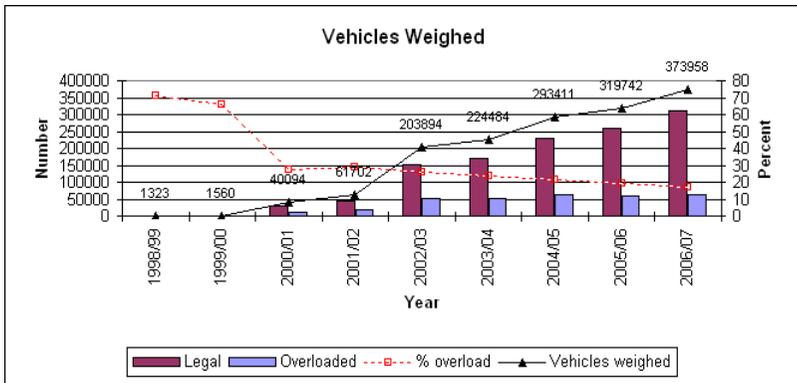
In contrast to Zimbabwe, countries that have not decriminalized the practice have had a very low rate of successful prosecutions via the criminal justice system. For example, on the N4 (Pretoria-Maputo) Toll Road, the number of overloading offenders successfully prosecuted during the period 2002-2007 was only 29 percent.

Privatization of weighbridge operations

Very encouraging results have been achieved in the curbing of overload control in the Western Cape where the private sector has been involved in carrying out various aspects of the control process. It is a fact that more work is now being done with less traffic personnel, due in large part to the availability of private operators at the site to assist the traffic officers which are in very short supply.

Figure 1 shows the significant improvements in various aspects of overload control since the involvement of the private sector.

Figure 1. Vehicle weighing statistics



The cost for providing private sector support for the traffic officers amounted to R316,605 per site per annum which is approximately 28 percent of the total cost incurred. The remaining 72 percent is utilized for the maintenance and upkeep of the facilities and equipment as well as running costs for services such as water, electricity and telephone. These are costs that would be required even if only traffic officers performed to the same extent as the partnership performs currently.

Self regulation of overload control

The promotion of self-regulation in the heavy vehicle industry is an initiative that is intended to foster a partnership with the industry to ensure proper load management, vehicle road worthiness and driver well-being. From the outcome of the pilot project with the timber industry in South

Africa, it has been concluded that the Road Transport Management System (RTMS):

- Provides an opportunity for consignors, consignees and transport operators to lead the way in a new generation of alternative compliance;
- Provides an opportunity to promote professionalism in heavy goods vehicle transport;
- The likelihood of success is enhanced because of the strong support from the government (Department of Transport, SANRAL and the provinces) for private sector initiatives;
- There is a potential for major economic benefits to the road transport industry in South Africa as a whole as a result of a reduction of accelerated road infrastructure deterioration due to overloading, an improvement in road safety and an increase in vehicle payload efficiency.

Since vehicle monitoring commenced in November 2002, the incidence of prosecutable vehicle overloading (greater than 5 percent) in the timber industry has reduced by between 40 percent and 45 percent. Furthermore, the average overload per vehicle has reduced by 14 percent during the same period. These figures are impressive, particularly as only four transport operators have been accredited to date. Others are in the application phase, preparing for an external audit.

The success of the project is to a great extent due to the active involvement of the consignees and consignors. At certain mills a four-hour delay penalty has been introduced which is applied to any vehicle that arrives at a mill and is found to be more than 5 percent overloaded on total vehicle mass. At these mills, improvements of more than 80 percent in terms of incidence of overloading have been observed.

One of the aims of the Department of Transport is to roll out this initiative to other industries, and eventually to establish a national accreditation system for the whole of the road transport industry. The RTMS initiative is worthy of serious consideration in Eastern and Southern Africa.

Cross-Border Overload Control System

The principle of the Cross-Border Overload Control System (CBOCS) is that Customs requires the driver of any commercial vehicle to produce

documentary evidence that it is not overloaded, in the form of a Weighbridge Clearance Certificate, before attending to the clearance of the vehicle for crossing the border.

Since the introduction of the pilot project at the Botswana/South Africa (Martin's Drift/Groblersbrug) border, the incidence of overloaded vehicles in excess of the 5 percent tolerance has reduced dramatically from a mean monthly value of 8.2 percent to 2.9 percent. There has also been a four-fold increase in the number of vehicles weighed.

The audit of the CBOCS shows that the pilot project has been a success in that it has achieved the main objective set initially by stakeholders—the reduction of overloading at the Groblers Bridge/Martins Drift border post.

The success of the CBOCS has been achieved with benefits to Customs in terms of minimizing the scope for under-declaration of goods on a mass basis and without additional delays to vehicles, and without significant additional delays to commercial vehicles.

Based on the outcome of the pilot CBOCS, similar projects should be considered at other border posts in the region.

Summary

The examples of emerging good practice included in this publication all exemplify aspect of the trend-setting reforms contained in the SADC document *Enabling Legal Reform: Control of Vehicle Loading*². Moreover, they have all demonstrated positive improvements in overload control which should be considered seriously by all countries in the region for adoption and, where necessary, modification to suit their specific situations.

² This document, still in a draft format, is published on the SSATP website.

NAMIBIA: Progressive strategy on overload control

Background

The overload control strategy developed in Namibia is based on the recommendations of the SATCC 5 Country Special Working Group on Overload Control³. At the time, only three single axle weighbridge scales were available for overload control and operated by the Traffic Department of the Police. These weighbridges were outdated and lacked spares for their repair and therefore were not in operation for most of the time. The scheduling of operations depended on the priority of the police and therefore overload control was accorded low priority in relation to other traffic control operations.

Against the above background, this case study reviews the strategy taken by Namibia to minimize the negative impact of heavy vehicle overloading and presents the results derived from overload control operations carried out on the network. The study also discusses the future plans of the Roads Authority with regard to private sector participation in the management of weighbridges and overload control operations with a view to improving on efficiency and cost-effectiveness.

The Road network

The national road network length of Namibia is 46,000 kilometers comprising trunk, main and district roads of which 5,500 kilometers are of bitumen surfaced standards, 40,500 kilometers are unsealed comprising

³ The final report was released in February 1994.

roads of gravel standards and tracks, along with 600 bridges and 2,000 culverts with spans greater than 1.5 meter.

The trunk road network consists of a north-south link from the border with South Africa to the border with Angola, the Trans-Kalahari Highway, a west-east link running from Walvis Bay at the west coast to the border with Botswana, and a link through the Caprivi Region known as the Trans-Caprivi Highway.

The three links are part of the regional development corridors originating from the coast, all identified as potential drivers of economic growth, enhancement of regional cooperation and promotion of tourism. The two corridors, the Walvis Bay-Oshikango-Namibe Development Corridor and the Walvis Bay-Ndola-Lubumbashi Development Corridor are all services by the Namibian trunk road network.

The average age of the bitumen road network based on the date of the first upgrade is 25.8 years, but improves to 23.1 years when the major rehabilitation interventions done over the period are taken into account. On average, the bitumen road network is therefore serving beyond its design life and major rehabilitation will be required in the short to medium term.

Table 2.1 Percentage distribution of the network by age

	>30	30<Age<25	25<Age<30	20<age<15	15<	<10
Length (km)	1,364	675	484	75	193	844
% of Total	37.5	18.6	13.1	2.1	5.3	23.3
Cumulative %	37.5	56.1	69.4	71.5	76.8	100.0

Previous status of overloading (1998)

Operations carried out in 1998 to determine the status of overloading gave levels ranging between 12 percent and 42 percent. The overall average of overloading on the network stood at 28 percent, transmitting into an annual cost of NAD 28 million (USD 2.7 million).

Given the high incidence of overloading and the extent and age network, it became necessary to develop a strategy to control the consumption of the road pavements, and reduce the rate of increase of the maintenance costs.

Overload control strategy

The overload control strategy for Namibia followed the regional weighbridge program formulated by a working group on overload control in the SADC region. At the time, only three single axle weighbridge scales were available for overload control exercised by the Traffic Department of the Police. These weighbridges were outdated and lacked spares for their repair and therefore were not in operation most of the time. The scheduling of overload control operations depended on the priority of the police and was therefore accorded low priority in relation to other traffic control.

A strategy on overload control was thus developed recommending the following measures:

- Developing weighbridge facilities at strategic locations on the network;
- Establishing a cadre of personnel dedicated to overload control and other road safety enforcement;
- Maintaining the efficiency and effectiveness of overload control through private sector participation in the management of overload control operations;
- Developing a networking system of all the weighbridge facilities for monitoring the operations and minimizing human interventions and therefore malpractices;
- Consulting stakeholders at all stages and, in particular, interacting with personnel involved in the judicial system regarding the implications of overloading;
- Encouraging joint overload control operations across borders and sharing of information;
- Introducing overload fees that fully recover the cost of damage of the road pavement.

Weighbridge network

The criteria for the selection of weighbridge sites at strategic points on the road network were:

- the level of heavy vehicle traffic on the road sections;

- the presence of essential services to minimize inconvenience to the heavy vehicle operators and the overload control personnel;
- future road network development and potential to generate heavy vehicle traffic; and
- for cross-border traffic, the availability of weighing facilities across the border.

Three overload control zones were identified on the trunk road network covering, the Trans-Caprivi Highway and its future extensions, the Trans-Kalahari Highway and the southern link with the Republic of South Africa. Twelve strategic weighbridge sites were chosen based on the above criteria:

- Otjiwarongo
- Gobabis
- Noordoewer
- Ariamsvlei
- Keetmanshoop
- Windhoek South (Aris)
- Windhoek north (Brakwater)
- Walvis Bay
- Oshivelo
- Onhuno
- Rundu
- Katima Mulilo

Because of the different levels of traffic, two classes of weighbridge facilities were adopted, Class A for construction at sites with high daily heavy vehicle traffic and Class B for relatively low daily heavy vehicle traffic with provision for upgrading to Class A when traffic justifies. The following facilities are provided for each of the classes:

Class A

- weighing facilities, comprising a multi-deck platform
- slow speed weigh-in-motion for screening
- control room

- ablution facilities
- parking area for apprehended vehicles

Class B

- 3 x 4 m single-deck platform
- control room
- parking area for apprehended vehicles

The weighbridges were therefore categorized based on the daily heavy vehicle traffic as presented in Table 2.2.

Table 2.2. Weighbridge categories

<i>Weighbridge</i>	<i>Class</i>	<i>Road section</i>	<i>Light vehicles</i>	<i>Heavy vehicles</i>	<i>Total</i>	<i>% heavies</i>	<i>Weighbridge built</i>
Noordoewer	A	1/1	161	45	206	22	Yes
Ariamsvlei	A	3/1	139	89	228	39	Yes
Keetmanshoop	B	1/2	466	141	607	23	No
Windhoek S	A	1/5	1655	131	1908	16	Yes
Windhoek N	A	1/6	3040	312	3352	9	Yes
Walvis Bay	A	2/1	162	44	206	21	Yes
Gobabis	B	6/2	594	129	723	18	No
Otjiwarong	B	1/8	540	180	720	25	No
Oshivelo	A	1/11	1400	180	1580	11	Yes
Onhuno	A	1/12	1309	146	1455	10	Yes
Rundu	B	8/3	382	87	469	24	No
Katima Mulilo	B	8/6	167	33	200	17	Yes

Note: These traffic counts refer to the time when the strategy was developed in 1998

In addition to the approved weighbridges network as per the strategy, the Roads Authority has completed a 3 x 4 weighbridge at Rosh Pinah to protect the newly completed road between Rosh Pinah and Aus. The Roads Authority is currently reviewing the strategy to determine whether the weighbridges that have not been constructed are still viable in terms of the locations.

Overload control legislation and regulations

The Road Traffic and Transport Act, 1999 (Act 22 of 1999) and Schedule of Regulations provide the legal limits of loads to be carried by heavy vehicles on public roads. The regulations specify maximum loads on axles, axle units, axle combinations, bridge limits and total vehicle/combination mass. The purpose of the limits is to control the consumption of pavements in line with the projected design pavement loading. The limits applicable in Namibia are shown in the Table 2.3.

Table 2.3 – Axle load and GCM limits

<i>Axle</i>	<i>Wheels/axle</i>	<i>Limit (Kg)</i>
Single (steering)	2	7,700
Single (non-steering)	2	8,000
Single (non-steering)	4	9,000
Tandem (steering)	2	15,400
Tandem (non-steering)	2	16,000
Tandem (non-steering)	4	18,000
Tridem (steering)	2	23,100
Tridem (non-steering)	4	24,000
Max vehicle/combination max	-	56,000

Bridge Formula: $P = (2.1 \times L + 18,000 \text{ kg})$

Where: P = permissible mass, and

L = distance in mm between centers of external axles

Weighing procedures

The weighbridges are computerized, the weighing procedures together with the provisions of legislation with regard to heavy vehicles not complying with the load limits have acted as a deterrent to overloading.

The procedures require heavy vehicles to be directed on the weighbridge, the driver to provide details of the vehicle, origin and destination and the cargo being carried. The axle and axle group loads and gross vehicle mass are automatically recorded and displayed on the monitor and compared with the legal load limits to determine com-

pliance. An allowance of 5 percent is given on axles, axle units and total vehicle/combination mass to account for possible movement of loads during transportation and small variations of the weighing platforms (scales). An original and two duplicates are printed and a copy is handed to the driver, the original and a copy are kept for record purposes. Legally loaded heavy vehicles and those loaded to within the 5 percent allowance limit are permitted to proceed. Those loaded above the 5 percent allowance but below 1,000 kilograms overload on an axle are issued with a notice and fined according to the relevant provision of the legislation and are suspended from operating on public roads until the loads are adjusted to legal levels.

Heavy vehicles that overload above 1,000 kg on an axle, axle unit or total vehicle/combination mass are impounded and the drivers are arrested and only released upon payment of bail and subsequent appearance in court. The vehicles can only be released upon adjustment of their loads to comply with the legal axle, axle unit, axle unit combinations and total vehicle/combination mass, with the provision that if this involves offloading, the load is transferred onto another vehicle. The movement or offloading and the procurement of another vehicle remain the responsibility of the driver or operator, which acts as a deterrent. The security of vehicles and goods for overnight stay also remains their responsibility. The overloading is treated as a criminal offence and the maximum fine imposed by the court in terms of the legislation is NAD 20 000.00 or 2 years imprisonment.

Weighbridge calibration, certification and maintenance

In terms of the Road Traffic and Transport Act, weighbridges used for prosecution are required to be calibrated and certified for accuracy for a period of no more than one year, by an inspector appointed according to the Trade Metrology Act. Each weighbridge is certified for accuracy and issued with a certificate by the same inspector. Besides, the Road Authority has entered into a maintenance service agreement for weighbridges with Avery Berkel Trading Namibia to carry out routine maintenance of all weighbridges twice a year or when the need arises.

Weigh-in-motion and vehicle load monitors

Two weigh-in-motion sensors, one in the south-bound lane and one in the north-bound lane have been installed at Brakwater weighbridge to screen vehicles. Only vehicles suspected of being overloaded are sent to the weighbridge. Weigh-in-motion equipment has also been installed at Walvis Bay weighbridge. The Roads Authority has five vehicle load monitors used to monitor escape routes and other minor roads.

Weighbridge management and dedicated personnel

The recognition of the damage potential of overloaded heavy goods vehicles to pavements and the associated costs prompted the Roads Authority, as the road network manager, to establish within its organizational structure a section dedicated to traffic law enforcement. By so doing, the Authority is focusing on one of its core functions as provided by the Roads Authority Act, that is, “prevention of excessive damage of roads by road users or any other parties”.

The Road Transport Inspection Services has representation country wide and is responsible amongst others for overload control operations at all the existing weighbridge facilities. The operations include weighing of heavy vehicles, issuing of fines and prosecuting operators that exceed the prescribed load maximums on axles, axle units, axle combinations and total vehicle/combination mass. The countrywide representation consists of five regional offices headed by Regional Control Inspectors working with between five and nine inspectors and between one and four scale operators who perform the weighing of vehicles while inspectors perform the law enforcement aspects. The weighing operations are coordinated by the manager of the section at head office.

Training of dedicated personnel

The requirements to be appointed as a Road Transport Inspector are grade 12 (Standard 10) with a basic diploma in road transport and traffic officer’s course. After the officers have been appointed, they undergo training in basic advanced overload control course. Officers also attend criminal procedure courses, weighing competence and TrafMan soft-

ware courses for them to be issued with competency certificates accepted by courts.

Overload control financing

The overload control operations are financed by the Road Fund administration through the Roads Authority budget. The fines collected in respect of overloading offences are paid to the State account thereafter collected by the Road Fund administration.

Overload control information monitoring system

One of the problems facing overload control in the region is the occurrence of malpractices at weighbridge facilities due to human interventions. The Roads Authority has implemented overload control computer-based information through the TrafMan system to network the operations of all weighbridges.

The system has the capability of transmitting the live weighing data to a central system at the head office for easy access by the data manager and the Roads Management System. In addition, a fully integrated management information system at each weighbridge record processes and produces the following reports amongst others:

- offence information, i.e. number of offences, maximum overloads, fine notices issued, etc.
- audit trail
- incident reports
- status of activities at the stations
- loading profile statistics
- effectiveness of overload control operations
- measurable indicators of pavement loading in terms of Equivalent Standard Axles.

Private partnership in management of weighbridges

The SADC Protocol on Transport, Communications and Meteorology encourages the participation of the private sector in transport related operations. As such the Road Authority's view is to sustain the effective-

ness of overload control through management by the private sector of those weighbridges on the road sections most trafficked by heavy goods vehicles. The Roads Authority carried out a study on how to involve the participation of the private sector. A pilot project at one of the highly trafficked weighbridges will be carried out when funds permit.

Management services provided by the private sector will include the following:

- operation of the screening facilities
- operation of the main weighing platforms
- monitoring of the maintenance requirements of the facilities
- liaison regarding the calibration and assizing of the screening and weighing facilities
- control of apprehended vehicles
- monitoring and reports on the maintenance requirements of the buildings and other services
- submission of monthly, quarterly and annual reports

The role of the inspectors at the private sector managed weighbridges will be limited to law enforcement, which includes the issue of notices and prosecution of offenders.

Stakeholders' participation and cooperation

The Road Authority conducts regular meetings and workshops to educate operators, drivers and sensitize magistrates and prosecutors on the effects of overloading. An Overload Control Technical Committee was recently established consisting of representatives from the Ministry of Justice and Attorney-General, the Road Authority, the Ministry of Works, Transport & Communication and the Ministry of Trade and Industry. Its mandate is to formulate weighbridge guidelines and deliberate on technical and legal issues relating to overloading.

Decriminalization of overloading offences

A study has been initiated to develop a system of administrative adjudication for road traffic offences including overloading. The Roads Authority through the line Ministry of Works, Transport and Communica-

tion has approached the Cabinet to decriminalize overloading offences so that offenders pay fees for the damage caused to the road network. The matter is under critical government deliberations.

Current status of overloading (2005)⁴

Weighing statistics during the period April 2001 to March 2006 for the current eight permanent weighbridges gives an indication of the trend of overloading. In this regard, the trend at each of the weighing stations shows a general reduction of the percentage of overloaded vehicles as the operators start complying with the legal limits. The averages for overloading above and within the 5 percent tolerance during the period considered ranges between 6 percent and 14 percent while the overloading above 5 percent tolerance where the offenders were prosecuted ranges between 0.1 percent and 2 percent as compared to the average (28.9 percent) from *ad hoc* overload control operations carried out at strategic locations during 1998-2000.

Table 2.4. Weighbridge weighing summary

Locality	Vehicles weighed	Vehicles overloaded		Vehicles charged	Percentage overloaded		Percentage charged
		Within 5%	Above 5%		Within 5%	Above 5%	
Ariamsvlei	11,760	1,586	172	172	13	1	1
Aris	16,788	169	27	27	1	0.1	0.1
Brakwater	44,438	4,081	317	317	9	0.7	0.7
Katima Mulilo	3,060	380	101	101	12	3	3
Noordoewer	2,469	70	13	13	3	0.5	0.5
Onhuno	12,087	865	154	154	7	1	1
Oshivelo	11,402	1,895	224	224	17	2	2
Walvis Bay	21,286	2,702	115	115	13	1	1
Total	123,290	11,748	1,123	1,123	10	0.9	0.9

For all of the stations currently in operation, there has been an increase in the percentage of vehicles overloaded within the 5 percent allowance.

⁴ These were the statistics available in 2008, when the data were collected.

The allowance has effectively been utilized by the operators to deliberately marginally overload with fuel which, after travel from the place of origin, is consumed to bring the loads to within the 5 percent tolerance. Weighing statistics per weighbridge for 2005 are given in Table 2.4 and for the period 1998-2005 in Table 2.5.

Table 2.5. Number of vehicles weighed and overloaded per year from 1998 to 2005: All weighbridges

Period	<i>Vehicles weighed</i>	<i>Vehicles overloaded within & above 5%</i>	<i>vehicles charged</i>	<i>% of vehicles overloaded within and above 5%</i>	<i>% of vehicles charged</i>
1998	1274	462	462	36	36
1999	5154	1236	1236	24	24
2000	2109	655	655	31	31
2001	13864	2179	1532	16	11
2002	39305	4555	1054	11	3
2003	58793	6499	991	11	2
2004	80476	8676	1006	11	1
2005	123290	12871	1123	10	0.9

Conclusions

The implementation of overload control strategy has facilitated the control of the pavement consumption and resulted in an improvement in road safety. A significant reduction in the percentage of overloaded heavy vehicles has been registered from 36 percent in 1998 for overloads within and above the 5 percent tolerance to 10 percent in 2005 and for overloading above the 5 percent tolerance to 0,9 percent at the operational weighbridge facilities.

Summary

The Namibia Case Study demonstrates a comprehensive strategy for overload control that is based on the trend-setting guidance provided in the SADC MoU on Vehicle Loading. The only key element of the strategy that is not yet in place is the decriminalization of overloading offences. However, this issue is the subject of an on-going study with a recommendation to Government to introduce an infringement system

in place of the more traditional prosecution system that has had limited effectiveness.

The implementation of the overload control strategy has facilitated the control of the pavement consumption and result in an improvement in road safety. There has been a significant reduction in the percentage of overloaded heavy vehicles from 36 percent in 1998 for overloads within and above the 5 percent tolerance to 10 percent in 2005.

The positive impact of developing and introducing a sound strategy on overload control has demonstrated in a quantitative manner the obvious benefits of adopting a structured approach to overload control in line with the SADC MoU on Vehicle Loading.

ZAMBIA: Process-related load control program

Introduction

Road transport is an important component in the economy of Zambia as a large proportion of goods are transported by road. The country is landlocked and the rail network inadequate to cope with the current freight task. Other modes of transport like air transport are insufficient and economically uncompetitive. The country has recently experienced a boost in the copper mining industry which has had a considerable impact on the utilization of the road system. Road transport is also considered to be the main mode of transportation in Zambia in the future.

The proportion of overloaded vehicles (above the legal axle load limit of 10 tons) has typically been in the range of 20 to 40 percent depending on the district and the season of the year. Single axle loads above 20 tons were often recorded during previous surveys. Heavy vehicles are often involved in road accidents in Zambia, and some of these accidents are caused by overloaded vehicles. The impact of the road accidents in Zambia is estimated at 2.3 percent of the gross domestic product.

Like many other countries in the region, the Zambian Road Authority has long ago recognized the importance of axle load control. Weighbridges have been constructed and operated for a long time. However, the efforts at controlling overloading have generally been ineffective for various reasons.

Problem analysis

Institutional framework and management

The management of the weighbridges in Zambia is the responsibility of the Road Development Agency (RDA), formerly the Roads Department under the Ministry of Works and Supply. The police are responsible for law enforcement.

The Ministry of Communication and Transport was previously responsible for the policy formulation and for the guidelines regarding axle load limits and control. This responsibility was taken over by the Road Development Agency from 1 January 2006.

The magistrate court is responsible for interpretations and penalty sanctions. Some of the problems previously found to be related to the institutional framework and management of axle load control are as follows:

- Lack of coordination between the various institutions responsible for the management of weighbridges and their operation.
- Shortage of adequate staff in the Roads Department, lack of financial resources, planning capacity and operational management. These shortages were in fact obstructing the professional ability of organizing weighbridge operations throughout Zambia.

Staff and personnel

The Road Authority was always responsible for weighbridge operations.

The weighbridge operators have been centrally employed, and the Provincial Roads Engineers are still responsible for the day-to-day operation in their respective provinces. There was previously no training program for operators. Many other shortfalls have been identified as listed below:

- No training was performed, neither theoretical nor practical, on-the-spot training. There was no manual containing the weighbridge routines;
- Supervisors at varying levels have failed to supervise and manage the weighbridge operations in all fields. There was no response to incoming reports from the headquarters;
- Failure to follow up the reporting had led to a lack of respect for the law and its enforcement;
- Only one weighbridge-operator was employed during each working shift which limited the opportunities for dealing with incidents and handling overloaded vehicles in peak traffic hours; and
- Uniforms and identification cards were not used by the weighbridge operators to demonstrate their statutory power.

Routines and administrative reporting

A weighbridge report form was previously filled in for every vehicle weighed at a weighbridge. The report was called the “Weighbridge Overweight Report” and was entered manually every time a vehicle was weighed. The information was for internal use only, and no information was passed from the operator to the driver regarding the actual vehicle weights. The following shortcomings were also prevalent:

- No action was taken for total vehicle/combination mass overloading, which can cause severe damage to the bridges and pontoons. Interlinks were often overloaded on total combination mass due to their many axles. Random checks on weighbridge reports often showed overloads by as much as 15-20 tons and sometimes even higher.
- No records were taken containing information about persistent offenders.
- Vehicle data was copied from the transport documents. The drivers’ names were not recorded.
- No checks of the vehicle registration card were carried out. Thus technically limited axle loads for the vehicles were not taken into consideration in the process.
- The individual significant axle configurations were not recorded. From the axle load records in the reports, one had to guess the axle configuration related to the particular records.
- Permits for abnormal loads were recorded in the weighbridge overweight report, but these vehicles were not being weighed to see if the axle load complied with the permits.
- The vehicle’s overall length was not recorded in the report. Vehicles exceeding the maximum dimensions for length (interlinks) were allowed to pass the weighbridge.
- Buses were never weighed even though experience shows that bus axles are often severely overloaded.
- When a vehicle was weighed and overload was found to be overloaded, a Certificate of Weight for the purpose of imposing fines was issued, and the driver instructed to pay the fine to the police, and the vehicle detained until the fine was paid.

- A driver of a vehicle found to be overloaded was not instructed to redistribute the cargo or offload the cargo even if he had to pay the fine for overloading. However, the overloaded vehicle was still allowed to continue to its destination.

Existing weighbridges and equipment

Most of the weighbridges are operated on a 24-hour basis with a service time arranged in two shifts. Weighbridges at border posts were operating during the opening hours for the customs offices thus preventing overloaded vehicles from escaping at night. Mobile weighbridges were never used for enforcement purposes.

Weighbridge equipment

Eight static weighbridges were installed on the Zambian road network from 1970 to 1980. All of these weighbridges are of a mechanical type named (Avery 58H 20) with a capacity of 30 tons. The weighing platform is 3,0 meter wide and 2,1 meter long. The situation with regard to these weighbridges was as follows:

- Only two axles of a triple axle configuration can be weighed in one operation.
- None of the existing weighbridges have been upgraded to electro-mechanical standard (hybrids).
- The weighbridges deal with traffic travelling in both directions.
- The weighbridges do not produce a print out of the recorded weights.
- Not all of the weighbridges have a power supply or communication facilities such as a telephone or radio connection. Since power supply is not available at some stations, they cannot be operated at night.
- Only one of the eight stations is equipped with a fenced parking area for vehicle detention. The parking areas are insufficient for parking, unloading and detention purposes.
- Not all of the weighbridges are equipped with traffic signs to inform the drivers about the presence of the weighbridge station.

- The weighbridge offices are small with inadequate facilities for storing reports or copies of the certificates of weights. No computers have so far been installed at the weighbridges.

Zambia has stored 10 sets of platform weighbridges for future use. The platforms were donated by the Italian Government in 1996.

Roads and traffic regulations – The legislation

Legislation pertaining to axle load limits and their enforcement was previously covered in the Roads and Road Traffic Act (Cap 464) of the principal laws of Zambia. The law stipulated certain provisions relating to vehicle length, maximum laden mass and axle load mass of vehicles. It further laid down procedures to be followed when weighing vehicles to ascertain their mass and the penalties to be imposed for violation of the regulations.

- The regulations in question were outdated and had been amended several times. It was difficult to obtain a high-level understanding of the legal framework;
- The regulations were not adequately known to the haulers and the transport industry in general;
- The regulations prescribed sanctions to be imposed on the drivers (fines) as a response to the criminal violation of the axle load limits;
- There was no official sanction for absconding vehicles;
- There was no reaction described for absconding vehicles;
- The regulations dealing with vehicle dimensions, procedures and sanctions for were not in accordance with the international standards and recommendations to be used in the region;
- The statutory powers of the weighbridge staff were not properly clarified.

Corrupt practices

It is well known that in Zambia as in other countries, weighbridge operations attract corruption. Haulers can benefit by making arrangements with operators or officials at higher levels to avoid having their vehicles weighed. There is evidence of such practice of collective and individual

arrangements. The reasons for the corrupt practice by the weighbridge staff are many and include the following:

- Weighbridge operators are relatively lowly paid;
- The collusion between operators and drivers is difficult to detect;
- Corrupt weighbridge operators have not been adequately penalized;
- There has been indifferent reaction from the central management to corruption;
- Corruption at the weighbridges reflects the generally relaxed attitude to corruption in the Zambian society;
- Money handling at the weighbridges is prone to “leakage” due to lax procedures for its collection.

Approach to overload control

Regional measures

Zambia is a member of both COMESA and SADC. The COMESA agenda for the transport and communication sector focuses on both the development of infrastructure and the facilitation of the movement of goods and people in the region. One of the areas that the COMESA facilitation instrument addresses is harmonized axle load limits to be implemented in its member states. However, these limits differ somewhat from the SADC limits as regards tandem axles and maximum permissible vehicle combination limits.

National measures

The following are some of the recommendations emanating from a regional working group on overload control to which Zambia subscribes:

- Improving supervision;
- Setting up incentives for weighbridge staff;
- Changing legislation from fines to fees (i.e. treating offences administratively rather than through the criminal justice system);
- Monitoring alternative and escape routes;
- Applying more stringent enforcement measures;
- Repairing existing equipment;

- Training and educating operators, enforcement officers, magistrates and prosecutors;
- Involving private sector participation although cautiously and monitoring current initiatives;
- Establishing an independent body such as a Roads Board to monitor private sector operations; and
- Exploring funding possibilities from the private sector through arrangements such as Build, Operate and Transfer (BOT).

The Zambian initiatives

Based on the regional recommendations, Zambia has developed its own initiative called *A Process Related Axle Load Control Programme for Zambia*. The initiative was taken by the Zambian Road Authority and the donor community in 2001 to develop a program and establish a project with a timeframe of four years to regain control over the situation. The development of the program was funded by the Norwegian Government based on institutional cooperation between road authorities and the Norwegian Public Road Administration. NPRA has previously worked within the same fields and conditions in Tanzania. Zambia later decided to use the same mode of cooperation and the same institution as a counterpart in the implementation of the project. The project started officially in June 2004 and was substantially completed in 2009.

The Program design

The program is a process-related one which covers the most important shortfalls identified in the previous system. The main elements of the program are as follows:

- Undertaking information and awareness campaigns;
- Improving organization arrangements and procedures;
- Pursuing legal initiatives where necessary;
- Revising current overload control procedures and training;
- Ensuring appropriate selection of weighbridge equipment and sites;
- Minimizing corrupt practices;
- Establishing a Vehicle Overload Management Information System;
- Commercialization/privatization of weighbridges;

- Undertaking stronger project monitoring; and
- Improving project administration and management of budgets.

The program sections are divided into a number of activities and sub-activities identified in the implementation plan with corresponding budget figures and time schedules for implementation. All the main program elements have now been implemented although not within the original timeframe described in the implementation plan due to slow progress with the development of the new legislation and the limited capacity for planning new weighbridges.

Implementation of the program

Section 1: Information & awareness campaigns

The first of two phases of an awareness campaign was completed successfully in 2004, including the printing and distribution of 10,000 awareness pamphlets and posters to all stakeholders, informing about the current legislation and change of legal consequences. All border posts were visited for the distribution of pamphlets, and billboards were installed at critical points on the road network. The billboards were included as part of the information and awareness campaign since it was felt that they would provide more information to truck drivers and the general public on the consequence of overloading. Seminars and press conferences were also arranged for the stakeholders.

The second phase of the information and awareness campaign was completed in 2006. The main objective of this phase was to hold a number of seminars and press conferences around Zambia to publicize information pertaining to the revised legislation to be implemented.

Section 2: Improve organization and procedures

This program component was successfully completed in 2005 and comprised the implementation of the already instituted regulations and procedures before the new regulations. The project management team has been strengthened with staff including a Project Manager, a Senior Operations Engineer and a Senior Planning Engineer. Junior staff and accountants have also been employed. In the regions, the provincial road engineers were involved in all weighbridge operations. Meetings were held with the National Task Force for Axle Load Implementation. The

police and customs officials were involved whenever weighbridge operations were being carried out.

Twenty-one new weighbridge operators were recruited and trained to replace all the old weighbridge operators dismissed in 2004. Nine of them are engaged to man the portable weighbridges out of which three are women. The portable weighbridges are being used to carry out spot-checks on the road-network. Twelve of the new weighbridge operators have been recruited and trained to man the fixed weighbridges. Follow-up routines have been instituted for all weighbridges and all weighbridge operators have been trained in weighbridge operations.

All loaded trucks are being issued with a weighbridge certificate which is being countersigned at all consecutive weighbridges. This seems to be effective in reducing overloading and it gives the driver an opportunity to know how much load he is carrying. It further gives the project management team an opportunity to countercheck the results for each weighbridge station. Quality procedures have been developed and are used when carrying out inspection routines for the fixed weighbridges.

Even though the project activity to develop the routines under this program section has ended, the following up on instituted routines is ongoing on a daily basis. The project team ran the weighbridges under the current routines until the new routines were introduced in October 2006 based on the new legislation.

Section 3: The legal initiative

By the end of 2005, a draft amendment to the Public Roads Act had been developed by the project team. This includes the draft of a new Maximum Weight of Vehicle Regulation which will be issued as a statutory instrument. The Cabinet Memorandum preparing for the principles was developed and approved by the Cabinet in October 2005.

Parliament has approved the amendments to Part V of the Public Roads Act of 2002. This was achieved at the end of March 2006. Based on the Amended Act, the project management team and counselors from the Ministry of Justice worked on the subsidiary regulation to the Act and, upon completion, were discussed with the stakeholders before the commencement of the awareness campaign.

The principles on which the new legislation is based can be summarized as follows:

- A principle of compensation for damage of the road by the owner of the vehicle has been instituted. The compensation is progressive and an average distance is used;
- Regulation introducing fees for absconding and diverting vehicles is being introduced;
- Regulations for awkward and abnormal loads are being introduced;
- Penalties and compensation can be imposed without appearing in court;
- The revenue from fees will be transferred to the Road Fund Agency and can be used for maintenance of roads;
- Vehicles will be impounded until all fines and compensation have been paid, and the load has been adjusted to legal limits;
- If corruption is revealed, weighbridge operators can be prosecuted and sentenced to jail for at least 18 months.

Some governmental orders and a guideline on abnormal load were completed for inclusion in the legislation. However, the guideline was not included in the initial activity plan. This guideline is urgently required and will be developed in the near future based on a model from South Africa.

Section 4: Change in present procedures and training

The development of new procedures and training depends on the new legislation since it is the backbone of this program component. Some activities such as developing new weighbridge procedures for mobile weighbridge operations were implemented in 2005. The Statutory Instrument to the Amended Act and the Governmental Orders contains most of the necessary changes in routines and procedures. A draft syllabus has been developed, and the manual for the training in new routines will be printed as a code book containing the entire legislation. The training of the central management team and operators started in September 2006.

Section 5: Weighbridge equipment and sites

This component consists of planning activities and investments. All the standards required for the development of new fixed weighbridges have been developed. These are as follows:

- Standard drawings and proposed weighbridge layout for small and large weighbridges
- Technical specification for weighbridges including modification of the Bilanciai platforms
- Architectural plans
- Standards for traffic signs
- Standards for lay-bys
- Standards for computerized program and printouts

Six sites from the eight targeted sites have been identified and two new weighbridges have been constructed. The first was opened for traffic in August 2006. However, the funding for the investment program is insufficient, and needs to be reconsidered to enable the construction of the planned additional fixed weighbridges.

Two sets of computerized portable weighbridge and vehicles have been procured and the portable weighbridges are fully operational. The portable weighbridges provide a valuable check (audit) on the operations of the fixed weighbridges. Two more sets of portable weighbridges have been procured and have been commissioned for use.

Section 6: Minimizing corrupt practices

The management team has instituted a good working relationship with the Anti-Corruption Commission (ACC). The ACC officers are part of the team during selected weighbridge operations. Several meetings have been held with the ACC to develop strategies to curb malpractices related to overloading.

Weighbridge operators issue weighbridge certificates to monitor the performance of fellow operators, and the endorsement of these certificates at all weighbridges en route support transparency and serve as a deterrent to corruption. The publishing of habitual offenders has not yet started as it awaits the further development of the vehicle overloading management system. Testing of the system is ongoing.

The activities of this program component are now completed. However, counterchecks carried out recently have revealed that even some of the newly recruited weighbridge operators have committed offences by taking bribes. They are being dealt with in accordance with the newly amended Act. Preventing corruption is a difficult task and needs to be carried out on an on-going basis.

Section 7: A vehicle overload management information system

The project used the opportunity to specify a Vehicle Overloading Management System (VOMS) together with the specification of the software for the portable weighbridges. The system makes it possible to identify persistent and produce various types of reports from the data records stored at the weighbridges. The system is developed to be able to transfer data from the weighbridges to a central database in the headquarters by using the World Wide Web and mail accounts. The system is already operating, but so far the project has only a few months of experience with the system. More testing has to be done. This database was recently used on the performance of benchmark tests for the project.

Although the VOMS is working well with the portable weighbridges, some changes need to be made before the software can be used on the new fixed electronic weighbridges. Further development and testing will take place before the first fixed weighbridge is installed.

A contract for updating the system to suit the fixed electronic weighbridges has been awarded. All routines identifying the persistent from the database will be developed under the same contract. Updated report generating tools to be used for benchmark testing will also be developed.

Section 8: Commercialization of weighbridge issues

Model contracts for commercialization of weighbridges are currently being developed based on experiences from South Africa. Preparations for the selection of weighbridges to be outsourced and the selection of contract type and advertisement of tenders are also being prepared.

Section 9: Project monitoring

The comparison between the baseline survey prior to the commencement of the project and the first benchmark test indicates that the rate of overloading has declined to acceptable standards as targeted in the program. However, it is too early to say that the rate of overloading measured in the benchmark test is representative of the entire country. Only future tests will identify the weak spots on the road network.

A mid-term review workshop to evaluate the performance of the project was held in 2006. The findings of the workshop are considered valuable inputs to modify some of the program components and the management routines.

Section 10: Project administration and budget

The project organization has already recruited and trained twenty-one new weighbridge operators. Nine of them have been trained in mobile weighbridge operations while the rest have been trained for deployment at fixed weighbridges.

The project has bought and developed an accounting system, which is being used for project accounts. The staff to operate the system have been trained and the system is up and running. This has made it easier for the project management team to make follow ups on all payments made by the project.

The Board of Directors has given the RDA the assignment to employ more weighbridge operators, and 12 new operators will be employed in due course. All personnel from the Zambian National Service who were manning the weighbridges are gradually being replaced by operators contracted and trained by the RDA. All the members of the project staff, including the weighbridge operators have been formally incorporated in the RDA organizational setup. Two weighbridge operators have been trained in database design and database maintenance in South Africa.

The central project management was relocated to newly refurbished offices in the industrial area in Lusaka in 2006. The new offices are spacious and able to accommodate the whole project team.

Program assessment

Achievements

The program has been running for about three years during which time the following achievements have been observed:

1. The amendment to Part V of the Public Roads Act has been accomplished. The Statutory Instrument has been finalized and the enforcement of the new regulation was implemented in May 2007.
2. The construction of the first electronic weighbridge in Kapiri Mposhi was completed in January 2007. The weighbridge was commissioned in February 2007. The new weighbridge is connected to the RDA headquarters through a VSAT communication system (Very Small Aperture Terminal). It is therefore possible to monitor weighing activities at weighbridge from the head office. Construction of the second electronic weighbridge in Kazungula has been completed. The same system has been installed at this weighbridge as well. This will be another state of the art weighbridge.
3. The project has procured four sets of portable weighbridges which are being used for random checks on public roads. The portable weighbridges are also being used to check on the operations of the fixed weighbridges. This has helped reduce corrupt practices at the fixed weighbridges as the weighbridge operators know that they are being monitored at all times.
4. Weighbridge certificates issued to all loaded vehicles and countersigned at consecutive weighbridges were introduced. This has helped weighbridge operators take up responsibility as they know that once they sign on the weighbridge certificate, they will be held responsible for the weight of that particular vehicle.
5. The benchmark surveys carried out in October 2005 and 2006 indicate a reduction in overloading at selected points on the road network.

Expected outputs

The main outputs from the project are as follows:

- A greater awareness of the importance of overload control to the national economy has been provided to the transport industry in

Zambia and neighboring countries through awareness and information campaigns. This helps give the transport industry an opportunity to adjust their practices and comply with the regulations ahead of the new government enforcement routines.

- The development of a management system consisting of necessary changes to existing management processes, procedures and documentation for the implementation of practical system to curtail overloading. This includes sustainable and reliable data collection.
- The development of a training manual for weighbridge operators so as to adequately train the operators. This will facilitate the smooth implementation of the new system.
- The adoption of new and more efficient legislation in accordance with SADC and COMESA guidelines on overload control.
- The upgrading of weighbridges and updating of weighbridge controls on the road network including the construction of reliable weighbridges and accurate means of recording the weighing results.

Salient issues in the new regulation

The salient features of the new legislation that merit mention are:

- The tolerance on axle and axle unit loads has been reduced from 10 percent to 5 percent.
- There is no tolerance given on total vehicle/combination mass.
- The absconding fee has been introduced for vehicles or combinations of vehicles that bypass the weighbridge.
- The maximum combination mass limit for particular vehicles has been increased from 55 to 56 tons.
- The procedures for carrying abnormal loads have been clearly defined.
- An awkward load penalty has been introduced for an operator transporting awkward loads to proceed with an overload.

Performance indicators

Clear and measurable performance indicators have been established as a basis for quantitatively determining the impact of the new program. The performance targets agreed upon are as follows.

1. The rate of overloading of axles to be reduced from 20 percent in 2002 to less than 5 percent in 2008.
2. The rate of overloading on the total vehicle/combination mass to be reduced from 30 percent in 2002 to less than 5 percent in 2008.

Lessons learnt

Some of the important lessons learnt from the implementation of the project are:

1. The process of amending Part V of the Public Roads Act has been slow. This has affected progress on some other vital program components.
2. The wide-ranging scope of the project requires more than the four years assumed for its implementation.
3. Before a project of this nature commences, it is important to have ample time to develop the implementation plan and detailed annual budget.
4. It is important to have a fully operational accounting and financial management system in place before commencing implementation.
5. It would be advantageous to divide the project in to separate sub-projects, one for operation and one for investment, and run them separately with different time schedules.

Conclusions

The significance of the program cannot be over emphasized. There is no doubt that it will contribute significantly to the improvement of the road network in Zambia. The legislation will provide the legal backing necessary to control overloading in a firm but reasonable manner. It will also reduce the unfortunate practice that negates the enforcement process and unfair competition against those who do not practice it as a matter of policy.

The process-related axle load control program followed by Zambia is a holistic and integrated one which has been implemented substantially over a four-year period. The new approach to overload control is based on a radical overhaul of the old approach and is largely in accordance

with the SADC MoU on Vehicle Loading and the Model Legislative Provisions on Management of Vehicle Loading.

Zambia has started to reap the benefits of its process-related axle load control program in terms of a significant reduction in overloading in since 2008.

ZIMBABWE: Decriminalization of overload control

Introduction

Overload control system

In Zimbabwe the overload control system is the responsibility of the Vehicle Inspectorate Department, which is in the Ministry of Transport and Communications. The basis of the overload control system is a Statutory Instrument promulgated under the Road Traffic Act, which sets out the load limits acceptable to the country. This legislation has had to change from time to time to take into account regional agreements. At the moment, the overload control regulations have been amended to comply with the SADC load limits.

Human resources

The Vehicle Inspectorate Department has a staff complement of 260 nationwide, i.e. 170 officers and 90 support staff, for example clerks, accounts personnel, casual laborers, etc. All these people are civil servants under the same conditions as the rest of the civil service and need to be motivated to do work outside the normal working hours.

Institutional structures, infrastructure and equipment

The Vehicle Inspectorate Department has a Head Office component within the Ministry in Harare but it operates through depots spread throughout the country. There are presently 22 such depots in Zimbabwe and most of these are equipped with a static weighbridge each for the purpose of overload control. It is important to note that over and above overload control, these vehicle inspection depots are also responsible for technical inspections of vehicles and the testing of drivers for licensing purposes using the same staff complement. The standard equipment used to weigh vehicles is a static weighbridge and although a variety of these can be found at the various depots, recent acquisitions

are, and all future acquisitions will be, standardized at a deck size of 4 meters by 4 meters. This makes it possible to weigh abnormal vehicles up to 4 meters wide.

Operations

The overload control policy in Zimbabwe is based on the elimination of overloading in the country. To that end, every depot has the obligation to weigh all suspect vehicles and bring all those overloaded to book. All border posts are equipped with weighbridges in order to prevent overloaded vehicles from entering the country. The distribution of depots is as follows (all depots have one or two weighbridges unless indicated as “Nil”):

- Nyamapanda border post
- Mutare border post
- Masvingo
- Zvishavane Nil
- Chiredzi
- Beitbridge border post (2 weighbridges)
- Gwanda
- Plumtree border post (2 weighbridges)
- Victoria Falls border post
- Hwange
- Bulawayo
- Gweru
- Kwekwe
- Kadoma
- Eastlea
- Chirundu border post (2 weighbridges)
- Chinhoyi (2 weighbridges)
- Bindura Nil
- Marondera Nil
- Chitungwiza Nil
- Belvedere Nil
- Training Centre Nil

Overloading offences

Previous approaches

Up to 1993, Zimbabwe referred all overloading offences to the Judiciary Court but the fines levied on transgressors were in no way a deterrent. Moreover, when cases were prosecuted through the courts, there were often long delays before matters were brought to trial. In addition, even though a prosecution might be initiated, there was no guarantee that an offender would be convicted. Even if convicted, there was also no guarantee that an effective sentence with real deterrent value would be imposed for judicial officers enjoy wide latitude in imposing sentences.

New approaches

In accordance with the recommendations of a Five Country Working Group on Overload which were subsequently incorporated in the SADC MoU on Vehicle Loading, Zimbabwe introduced a system of administrative controls for overloading with the aim of overcoming the difficulties associated with criminal enforcement. To this end, new legislation was introduced in 1993 to accommodate the levying of an administrative fee for overloading instead of a statutory fine. In essence, offences for overloading had been decriminalized.

The main feature of Zimbabwe's new system was the introduction of a range of fees aimed at recovering the quantum of the damage caused by overloading. Because overloading is no longer treated as a criminal offence, but as an action with certain economic consequences, there was no need for the involvement of the criminal justice system. The focus shifted to a mechanism to ensure that the operator of the overloaded vehicle pays compensation for the extent to which overloading has damaged the road pavement.

Impact of decriminalization

Before decriminalization of overloading offences, the incidence of overloading in Zimbabwe was approximately 43 percent. However, soon after the introduction of the new system of overload fees, which was much steeper than the previous fines, the incidence of overloading dropped to 15 percent. In 1996, the overload fees were drastically in-

creased and this resulted in a further reduction of the overloading incidence to around 6 percent. Inflation affected this figure and it was on the rise again reaching almost 20 percent until the fee was adjusted upward in line with inflation.

The overloading situation in Zimbabwe is currently as follows:

(a) Border posts

- Vehicles weighed at Nyamapanda show 3 percent overloading
- Vehicles weighed at Chirundu show 2,5 percent overloading
- Vehicles weighed at Beitbridge show 0,4 percent overloading

(b) Inland depots

- Vehicles weighed at Masvingo show 1 percent overloading
- Vehicles weighed at Kwekwe weighbridge show 18 percent overloading

As can be seen, border post overloading has almost been eliminated. It is inland overloading that differs from place to place in the country, depending on the regularity of enforcement and the availability of resources to sustain such enforcement. Internally, Zimbabwe shows a worst case scenario of 18 percent overloading and a best case scenario of 1 percent overloading. The border post figures are very reliable as every loaded heavy vehicle is weighed as it enters or leaves the country. However, the inland weighbridge figures are affected by:

1. the level of the overload fee
2. the regularity or frequency of enforcement, and
3. the availability of resources

Summary

Zimbabwe has been able to greatly improve the effectiveness of its efforts to curb the practice of overloading heavy goods vehicles by decriminalization of vehicle overloading and the introduction of administrative adjudication procedures to deal with infringements of the legal weight limits. The country imposed stiff fees for movements of apprehended overloaded vehicles, and generally required on-the-spot off-

loading of excess weight. This resulted in a significant reduction in the incidence of overloading which is now below 3 percent at border posts compared to over 40 percent before decriminalization of overloading offences.

SOUTH AFRICA: Privatization of weighbridge operations

Introduction

Background

The Roads Branch of the provincial administration of the Western Cape constructed their nine provincial weighbridge sites between October 1994 and July 2000. The construction program was part of a national strategy that aimed at protecting corridors known for long distance freight haulage.

Objective

This case study deals with the options considered by the Roads Infrastructure Branch in overcoming the old problem of traffic officer availability and commitment and the added problem of multiple authorities responsible for various aspects of the total overload control operation and the subsequent lack of coordination, single point responsibility and lack of focus.

Problem statement

Providing a facility at which an overload offender can be detected and apprehended with success has proven to be the easy part in a process that entails a number of role players, namely:

- The Provincial Roads Authority (RA) whose mandate is to protect the provincial road network. The RA saw the initial construction cost of R11.4m as a justifiable expense in order to curb overloading to gain long term benefits in the form of reduced road maintenance costs;
- The Provincial Traffic Department, which according to legislation, is the only law enforcement agency that can instruct a road

user on the provincial road network to enter a weighbridge site for load, vehicle or driver checking purposes;

- The Office of the Public Prosecutor whose mandate it is to provide public prosecutors to prosecute offenders when they appear in court;
- The Department of Justice that provides the judicial system for an aggrieved offender to state his case in order to determine if he/she is guilty of the offence or not, and last but not least,
- The Local Authority that collects and retains the admission of guilt fines as agreed by the judicial system or alternatively the fine imposed by the court.

The provincial administration underwent restructuring after the 1994 elections and the most significant change in the Western Cape, from an overloading control point of view, came about in 1999/2000 when the Provincial Traffic Officers became part of the Department of Community Safety. The Provincial Traffic used to be a directorate under the Roads Branch, and whilst two of the role players were in one directorate prior to the restructuring, all the role players were now in different departments or with different authorities. The Roads Branch became the Roads Infrastructure Branch under the Department of Transport and Public Works.

The restructuring was not the only reason for searching for a new dispensation in overload control. A shortage of traffic officers and a commitment to utilize the new weighbridge facilities for overload control had always been a problem, even when provincial traffic was a directorate of the roads branch.

Model development

The first important strategic decision taken by the Roads Infrastructure Branch was that the long term benefits of allocating a portion of the road maintenance budget to overload control exceeded the short term losses due to having less funds available for the ever increasing demand for road infrastructure maintenance and improvements.

The first step however, was to come up with a new dispensation on how the problem of overload control should be tackled in order to make best

use of the funds allocated to this function. Key aspects that provided guidance on the model selected for implementation were identified from the onset, namely:

- Only traffic officers employed by the provincial government or local authorities might perform law enforcement duties on the provincial roads;
- All fines collected go to the local authority in whose area of jurisdiction the weighbridge is situated, and not to the authority providing the law enforcement nor to the Department of Justice that provides the judicial system;
- The Office of the Public Prosecutor must be satisfied that the new dispensation does not compromise their position of prosecuting offenders successfully.

Essentially two models were considered.

Model – Public-private partnership

In this model, the facilities and the law enforcement function are handed over to the private sector for a predetermined period. Performance standards are set for the facility maintenance, the law enforcement effort and to what extent fines have been recovered and payment are based on whether these standards are met or not.

Factors that played a role in not opting for this model were:

1. The Roads Infrastructure Branch realized that they are in a better position to negotiate the law enforcement effort with the provincial traffic authority than putting the onus on the private partner to do so.
2. The Director of Public Prosecution provided strict guidelines on the involvement of the private partner's personnel and what they may or may not do in order not to compromise the prosecution process. Aspects that played a role were:
 - Involvement of the private partner's personnel may only be at a level where it would not be necessary to appear in court for neither the prosecutor nor the defense.
 - The private partner should have minimal duties concerning fine recovery, and payment based on performance which en-

tails that fine recovery will not be allowed. The main reason for this is that overload control could be seen as vindictive if the private partner receives financial gain based on recovered fines.

Model – Private sector participation

In this model selective tasks to be performed at the weighbridge are offered to the private sector on tender basis. This model was first implemented as a pilot project at the Beaufort West weighbridge site before the services were outsourced on a tender basis.

The tasks outsourced can be categorized in two main categories – Facility management and support staff.

1. Facility management

- Maintenance and upkeep of the fixed assets
- Scale repairs and the regular calibration (verification) thereof
- Maintenance and upkeep of office equipment and furniture
- Maintenance and upkeep of mobile screening devices and other equipment used by the traffic officers in their duties
- Services to the site which include water, electricity and telephone

2. Support staff

- Site agent to oversee the operations and provide vital link with the law enforcement agency
- Staff to assist the traffic officers in their task of overload control according to procedures approved by the Director of Public Prosecutions
- Site clerk to provide administrative support for the site agent and the law enforcement agency
- Cleaning and gardening staff to tend to the cleanliness of the working environment and the daily upkeep of the grounds
- Caretaker to provide 24-hour 7 days a week presence, especially during hours when there is no weighing activity

The advantages of this model over the old dispensation where the sites were handed over to the provincial traffic department for overload control purposes are:

- Previously overload control was done on an ad hoc basis and it was easily seen as a non-essential task, especially when traffic officer resources were low. With the private sector involvement overload control became an essential task (similar to providing point duty at a busy intersection on a daily basis). It could be considered fruitless expenditure paying for support staff whilst the traffic officers do not report for duty at the weighbridge site, an aspect that they are very aware of and try to avoid.
- Aspects that caused frustration with the traffic officers such as the cleaning and maintenance of the facilities and equipment are taken care of on a daily basis with a lot less hassles as previously experienced.
- Responsibility of the working environment lay with a single person, the site agent, whereas in the past it rotated depending on the officer in charge for a specific period or day. Time delays resulting from lost keys or lack of printing paper due to the previous team not ordering new stock were thus eliminated.

Contractual arrangements

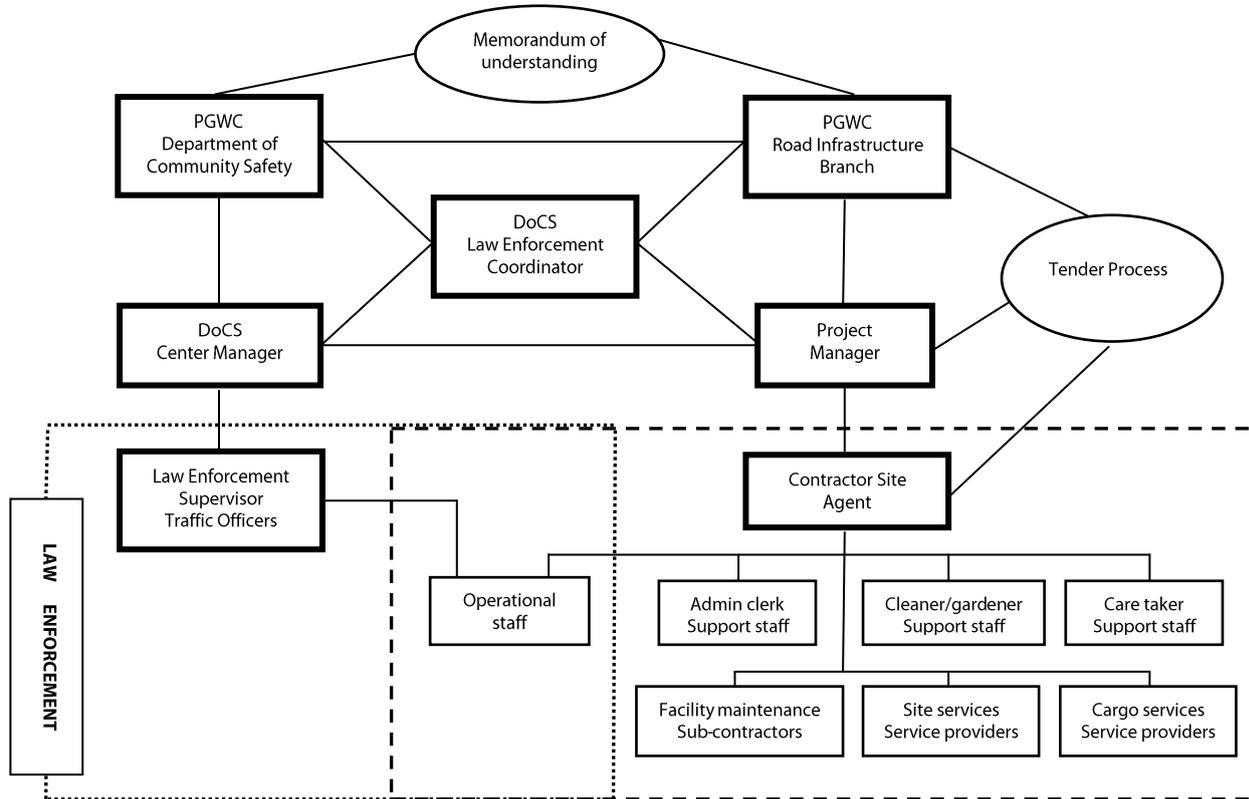
The contractual arrangements with the Department of Community Safety to provide the law enforcement services were in the form of a Memorandum of Understanding (MoU) between the two departments.

The MoU took the changing environment in which overload control is practiced into consideration and all aspects needing amendments from time to time was put into schedules to which reference was made in the memorandum. It is also stated that the schedules may be amended by mutual agreement between the persons nominated by the respective departments to form the liaison committee that meets on a monthly basis. The operational aspects and requirements are thus decided on by the liaison committee and these changes do not affect the integrity of the MoU once it has been approved by the Heads of the departments.

The contractual arrangements with the private sector contractor was in the form of a public tender which underwent various changes from the original tenders that were awarded in November 2001 to those that are currently in progress. The major changes were:

- No specific group was targeted for procurement with the initial tenders, except for the use of local labor (within a 25 kilometer radius from the weighbridge site) and preference to previously disadvantaged individuals on the 90 percent price and 10 percent targeted procurement formula. This was later changed to Affirmable Business enterprises within the geographical area in which the weighbridge was situated – normally the boundaries of the district municipalities for the specific weighbridge.
- The feedback from the initial tenders showed that inexperienced tenderers needed guidance in order to offer a fair and reasonable price for the services. This problem was overcome by providing detailed schedules to prompt tenderers on overheads, taxes and levies to take into consideration when they calculated their tendered rates. This proved to be very successful and the considerable variability in rates was significantly narrowed down thereafter.
- The initial tenders also called for rates on a monthly basis for the operational and support staff. Whilst this was acceptable for the support staff who had to work irrespective of whether overload control was being performed or not, it led to a lot of fruitless expenditure for payment of operators. This expenditure stemmed from traffic officers not being available for duty to planned routine scale maintenance and calibration which could take up to two days to perform. Operational staff is now being paid per shift completed and are only guaranteed 10 shifts per month.
- The first contracts made provision for three operators at the weighbridge site per shift to support the traffic officers in the weighing process and two more agents as part of a screening team that uses mobile mats to screen vehicles on various escape routes. There were never sufficient traffic officers per shift to do full time weighing and screening with the results that there was an oversupply of operators from the private sector. This problem was solved by doing away with the screening teams and taking on casual laborers for the screening operations done on an ad hoc basis. The number

Figure 5.1. Organizational structure for control at provincial weighbridges



- of private sector operators was thus reduced from five per shift to three.

Figure 5.1 shows how the overload control is organized from a contractual and working relationship perspective. Support staff is the sole responsibility of the site agent but in terms of the operational staff, close liaison with the senior traffic officer at the site is maintained to co-ordinate shift start and end times and various procedures to ensure that the requirements of the Director of Public Prosecutions are met.

Operational costs

As previously mentioned, the Provincial Traffic Department used to be a directorate under the Roads Branch until the restructuring in 1999/2000. During the negotiations for the services that should be provided by the newly formed Department of Community Safety the shortage of manpower and the fact that the Province was already in a three year-budget period (Medium Term Expenditure Framework-MTEF period) were mentioned as possible stumbling blocks to implement the Road Infrastructure Branch's vision for the new model of overload control at the provincial weighbridge sites.

The Roads Infrastructure Branch undertook to fund the cost for the training and salaries of the 56 officers required for the new initiative until the end of the Medium Term Expenditure Framework (MTEF) period which was March 2002. This entailed paying the allowances for the 56 students for 5 months (Feb 2001-June 2001) and their salaries, allowances, uniforms, etc. for a 9 month-period, July 2001 to March 2002. Table 5.1 provides details of the funds transferred.

The budgetary requirements for providing traffic officers to perform law enforcement duties at the provincial weighbridge sites in accordance with the MoU became the sole responsibility of the Department of Community Safety with the start of the new MTEF period in April 2002.

Table 5.1. Funds transferred from the Roads Infrastructure's Budget to the Department of Community Safety (SA Rand)

<i>Expenses</i>	<i>Budget</i>	<i>Cost/Officer</i>	<i>Cost/Officer/Month</i>	<i>Comment</i>
Salary	1,594,582	27,027	3,003	Salary 36,040 p.a. (for 9 months)
Uniforms	295,000	5,000	-	Once-off cost
Allowance	192,000	3,254	651	during 5 months at College
Vehicles	1,960,000	-	-	28 vehicles @ 70000 / vehicle
Stand-by	34,361	582	146	4 months active service
Shift-allowance	3,140	53	13	4 months active service
Stationary	21,240	360	90	4 months active service
Equipment	383,400	6,498	-	Once-off cost
Total	4,483,723	42,775	3,903	

The budgetary requirements for providing traffic officers to perform law enforcement duties at the provincial weighbridge sites in accordance with the MoU became the sole responsibility of the Department of Community Safety with the start of the new MTEF period in April 2002.

The pilot project at Beaufort West ran from April 2000 until May 2002 and the total cost payable, came to R4.06 million. The appointment of private sector Affirmable Business Enterprise (ABE) contractors to provide the services as indicated in the model started in November 2001 and the last contract was awarded in September 2002. The initial 24-month contract was extended for 12 months before new tenders were called for. These are the contracts that are currently in place with the new generation of documents being prepared.

Table 5.2 gives a summary of the expenditure on the management contracts for the financial years as indicated.

There was a reduction in operator salaries from a maximum of R2.78 million in 2003/2004 to R2.086 million in 2005/2006. This saving was mainly due to the move away from paying monthly salaries to payment for shifts completed and reducing the staff from 5 per shift to 3 per shift. Note also the reduction in training costs which is the result of trained staff being re-employed during the second round of tenders.

Table 5.2 - Management Contracts Financial Costs (SA Rand)

<i>Item Costs</i>	<i>2001/2002</i>	<i>2002/2003</i>	<i>2003/2004</i>	<i>2004/2005</i>	<i>2005/2006</i>
Overheads	432,067	3,046,911	3,636,930	3,566,343	2,504,709
Salaries	382,142	3,201,673	3,908,270	3,644,543	3,832,482
Support staff	132,294	928,972	1,125,144	1,282,842	1,718,730
Operators	249,849	2,272,701	2,782,384	2,352,524	2,076,024
Casual	0	0	742	9,177	37,728
Training	104,674	133,766	150,002	30,216	29,582
Municipal services	7,292	60,534	83,450	122,824	171,798
Scale	21,437	357,166	498,787	518,020	410,564
Maintenance	18,801	131,485	191,039	204,398	212,006
Calibration	2,636	225,681	307,747	313,622	198,558
Operational equipment	0	29,776	38,166	1,332,061	1,091,591
Facility management	11,283	254,751	3,030,848	890,421	2,066,775
Maintenance	11,283	254,751	732,320	778,662	767,465
Improvements	0	0	2,298,529	111,759	1,299,310
TOTAL incl. escalation	958,896	7,084,577	11,346,454	10,104,429	10,107,500
Works	937,114	6,514,116	10,696,535	9,449,620	9,786,701
Escalation	21,782	570,461	649,919	654,809	320,799

Note: Cost exclude VAT

The following can be used as a guideline on the staff employed by the private sector:

- Operators: 3 per shift, 1 Supervisor and 2 Assistants – 8 hour-shifts worked any time 24 hours a day 7 days a week – paid per shift worked, minimum of 10 shifts per month guaranteed
- Admin clerk: 1 per site, work normal office hours, paid monthly
- Cleaner/gardener: 1 to 2 per site depending on garden size, working normal office hours, paid monthly
- Site attendant: 2 or more per site, only on duty when no weighing takes place, paid per 8 hr shift worked
- Site agent: 1 per site, work normal office hours, paid monthly
- Casual laborers: As an when required for ad hoc tasks and/or screening, paid per hour

The current minimum traffic officers required per shift is 3 with 1 senior as supervisor. Ad hoc screening normally take place when additional traffic officers are available or by overlapping 8-hr shifts.

Capital expenditure

When the nine provincial weighbridges were initially constructed, the modus operandi of the operational model was weighing on an ad hoc basis. The initial capital outlay was thus geared for spending in proportion to the intended use with the results that the accommodation provided did not cater for the increased usage and the raise in number of personnel that utilizes the facilities during a weigh shift.

Most of the upgrading during the past six years was to expand the office space in the control buildings at the various weighbridge sites. Aspects such as providing canopies over the platform scales and hard top parking areas to improve the load correction facilities for the cargo service providers that use forklifts for this task. Table 5.3 shows the total capital layout to date and includes the current upgrading taking place at Beaufort West (2007).

Results of overload control operations

As indicated in Figure 5.3, the number of vehicles being overloaded increase on a year to year basis but, more importantly, overloaded vehicles as a percentage of those that were weighed show a decline of approximately 10 percent.

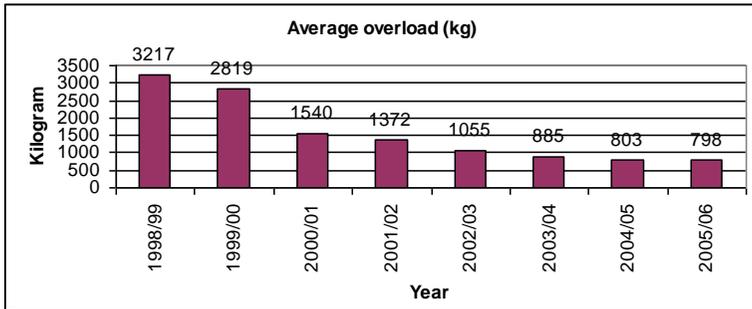
Figures 5.2 and 5.3 also demonstrate that a beneficial difference is being made with the new incentive. They clearly show the decrease in the average overload in kilograms and reduction in the percentage of overloaded vehicles.

Table 5.3. Capital works at the provincial weighbridges

<i>Site</i>	<i>Type</i>	<i>Date completed</i>	<i>Description</i>	<i>Cost*</i>
Beaufort West		Mar-95	Initial construction	0.600
	Single	Jan-02	Extension of building & Rehabilitation of approaches	0.500
			Extension of building & canopy	1.100
	Multi	Oct-07	Reconstruction access	25.000
Somerset West		Mar-95	Initial construction	0.600
	Single	Mar-05	Temporary building & canopy	0.300
			Improved parking and access	2.400
Klawer		Mar-95	Initial construction	0.600
	Single	Mar-05	Extension of building & canopy	0.300
			Access & parking improvements	3.100
Vredenburg		Mar-95	Initial construction	0.600
	Single	Nov-05	Extension of building & canopy	0.300
			Access & parking improvements	2.500
Moorreesburg		Mar-95	Initial construction	0.600
	Single	Nov-05	Temporary building & canopy	0.300
			Access & parking improvements	2.000
Vissershok	Multi	Feb-97	Initial construction	2.200
		Jul-04	Extension of building and improvements of parking area	1.800
Joostenbergvlakte	Multi	Jan-98	Initial construction	3.600
		Jul-04	Extension of building and improvements of parking area	1.800
Rawsonville	Multi	Sep-98	Initial construction	3.900
			Extension of Building	0.200
Swellendam		Jul-00	Initial construction	2.300
	Single		Canopy	0.300
		Nov-03	Extend Building and parking area improvements	1.100

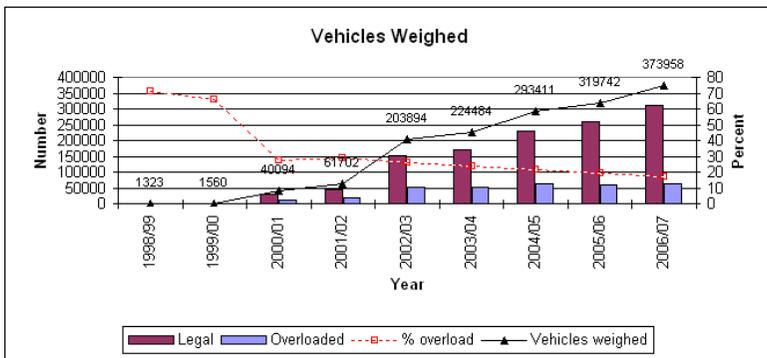
* Approximate costs R'000 (exclu.VAT)

Figure 5.2. Average overload in kg over time



One of the initial challenges to overcome was the animosity between traffic officers and private operators. The advantage of having a support staff and a process where problems were quickly attended was easily accepted, but having to work with the private sector operators who sometimes knew the regulations better than they did was not easily accepted. This, however, was of a temporary nature and as soon as the so-called “rotation” system was implemented and traffic officers with less experience on overload control law enforcement were deployed at the sites, the knowledge provided by the private sector operators and staff on the systems and procedures at the site worked to everyone’s benefit.

Figure 5.3. Vehicle weighing statistics challenges faced



The only other challenge was the lack of business experience from some of the Affirmable Business Enterprise contractors. The Roads Infrastructure Branch accepted that some form of training, guidance and assistance needed to take place initially. The most serious problems were personnel related, and the lack of experience with regards dealing with

the labor laws and procedures could clearly be seen. All the contractors were put through an accredited training course that provided them with NQF level 4 certificates for Civil Engineering Contracting. All the aspects in which they lacked skills were addressed in the course. Five of the initial nine contractors passed the course, whilst two of the remaining four aim to complete it during 2007 together with the new group of nine currently on course.

Conclusions

There is no doubt that the positive results achieved in the curbing of overload control in the Western Cape would not have been possible based on ad hoc weighing, irrespective of which law enforcement agency performed the task. It is a fact that more work is now being done with less traffic personnel, only due to the private operators available at the site to assist the traffic officers.

The operational cost for the management contracts are sometimes misinterpreted and managers tend to look at the bottom line cost of approximately R1,12 million per site per annum. Splitting the 2005/2006 management contracts financial cost in table 2 into direct cost for providing private sector staff to assist the traffic officers, and all other cost shows the following results:

Direct cost for providing operational staff	R 2,849,448
Other costs	<u>R 7,258,052</u>
Total	R 10,107,500

This comparison shows that the cost for providing private sector support for traffic officers only comes to R 316,605 per site per annum which is approximately 28 percent of the cost incurred. The other 72 percent go towards the maintenance and upkeep of the facilities and equipment as well as running costs for services such as water, electricity and telephone. These costs would be required even if only traffic officers performed to the same extent as the partnership performs currently.

Weighing process showing how private contractors interact with traffic officers to perform weighing duties



The weighing process starts with the collection of vehicle information, company name, cargo type, origin and destination from the driver. Information used for database purposes and screening of vehicles. Note that the operator does this in advance as not to delay the weighing process. The permissible mass of the front axle as limited by tyres and manufacturer is also collected during this advance screening process.



The advance screening information is passed on to another operator that enters the information as the vehicle that has to be weighed arrives at the scale.

Note traffic officer on the forecourt monitoring the procedures.

A potentially overloaded vehicle is directed to the holding yard by the operator and the traffic officer informed accordingly.



Traffic officer and operator collecting detailed information from a potentially overloaded vehicle.

Note that the traffic officer records all the detailed weighing information on a field sheet. This information is used in court as evidence should the case go to court.



Re-checking the front tyre manufacturer's rating. The operator and traffic officer assist each other with the collection of data to eliminate errors.



Operator assisting the traffic officer in measuring the distance between axles. Before the private sector involvement this task had to be performed by two traffic officers.



Traffic officer obtaining manufacturers plating information from the cab.



Operator entering the newly collected detailed vehicle information into the computer system managing the weighing process. Note that the other operator continues with normal weighing whilst the detail weigh is in process.



The detail weigh operator previews the information on screen and requests the traffic officer to scan it and confirm that the weigh slip may be printed.

A weigh slip may be corrected after it has been printed, but this involves giving reasons as to why corrections are made and staff try to avoid this at all costs.



Traffic officer explaining the detail weigh slip to the offender and enters the required information of the offender into the prosecution module of the computer system.

This is the only aspect in the process where the private contractor's operators are not involved at all.

SOUTH AFRICA: Self regulation of overload control

Introduction

Heavy vehicle overloading continues to be a major problem in South Africa notwithstanding efforts at more effective control by the authorities. One of the tasks of the Department of Transport's National Overload Control Strategy was to investigate the possibility of implementing some form of self-regulation in the heavy vehicle transport industry to complement the enforcement efforts of the roads authorities to address the problem. The strategy recognizes that the ability to monitor vehicle loads at origin and/or destination based on operator supplied data is very attractive, strategic and feasible, and could greatly assist in addressing the problem of vehicle overloading (and under loading). This could save the trucking industry significant time and costs, and improve the logistics of transporting goods by road.

The National Heavy Vehicle Accreditation Scheme in Australia

An international review found that the National Heavy Vehicle Accreditation Scheme (NHVAS) that has been implemented in Australia over the past few years has a number of components appropriate to the South African situation. The aim of the initiative is to increase the responsibility of the transport operator and/or consignor/consignee of loading vehicles correctly, thereby reducing the occurrence of overloading and under loading. The national policy on alternative compliance was put forward under the auspices of the National Road Transport Commission (now the National Transport Commission) and approved by the Government in 1997. The self-regulation initiative was developed and implemented as the NHVAS and covered two distinct modules: mass man-

agement and maintenance management. A third module for fatigue management was in the process of being finalized.

The NHVAS is a voluntary alternative to conventional enforcement. It allows heavy vehicle operators to demonstrate, through audits of their transport management systems and vehicle or driver assessments that their vehicles and drivers comply with regulatory standards. By doing this, operators gain access to some variation from compliance and enforcement practices. The primary long-term objectives of the scheme are intended to:

- Improve efficiency for scheme members by reducing the impact of conventional regulatory enforcement;
- Raise levels of compliance for non-accredited operators through more effective deployment of enforcement resources;
- Reduce accelerated road infrastructure damaged caused by overloaded vehicles;
- Improve road safety; and
- Increase the productivity of the transport industry through adoption of good management practices.

In reviewing the Australian scheme, which extends beyond vehicle mass/overload control to the crucial safety issues of vehicle condition and driver fatigue, it was clear that the fundamentals are well-grounded and that scheme was developed with input from a wide range of stakeholders.

The Road Transport Management System (RTMS)⁵

Background to the RTMS

An initiative in the timber industry, which commenced in 2002, aimed at reducing overloading in order to reduce accelerated road infrastructure deterioration, and to promote good corporate governance. In order to realize the full impact of protecting the road infrastructure, it became important to obtain buy-in from other industries. The project in the timber industry therefore resulted in a national pilot project, which was

⁵ The RTMS was originally called the Load Accreditation Programme (LAP). The name was changed in November 2005.

initially funded by the Department of Trade and Industry (DTI) and Forestry South Africa under the DTI's Sector Partnership Fund (SPF). The Institute for Commercial Forestry Research (ICFR) is directing the project and the project team consists of the National Productivity Institute (NPI), CSIR Built Environment and Crickmay and Associates. Consignees/consignors (Sappi, Mondi and NCT) are also actively involved in the project and are represented on the project Steering Committee together with representatives from the Department of Transport, the South African National Roads Agency (SANRAL) and the Road Freight Association (RFA), including transport operators.

To date a number of aspects of the RTMS have been addressed, all of which have involved consultation with representatives of the timber industry and other role players. These include:

- Underlying principles and business rules;
- Rules of compliance for accreditation;
- Proposed incentives/concessions for accredited operators;
- Heavy vehicle management system incorporating vehicle loading, vehicle maintenance, load securement and driver wellness;
- Monitoring of vehicle combination masses at destinations (pulp mills);
- Implementation plan (Application, Pre-accreditation and Accreditation phases);
- Development of training modules;
- Training workshops for senior management;
- Meetings with the KwaZulu-Natal Department of Transport, Mpumalanga Provincial Government and TRAC (N4 Maputo corridor concessionaires);
- Negotiation of possible concessions with regulative authorities;
- Broadening of stakeholder base to include other industries (pulp, paper and board, coal, asphalt, aggregate and sand, and sugar).

The project is essentially driven by the private sector with involvement and support from the government. It is viewed as a proactive response not only to the rapidly deteriorating road infrastructure (particularly provincial roads) and poor road safety statistics in South Africa, but also to the impending amendments to the Road Traffic Act such as extending

the responsibility of overloading to the consignor and/or consignee and the introduction of a road damage “fee” over and above fines for overloading.

Underlying principles

The pilot project commenced with the development of “underlying principles”. Input was obtained from a wide range of stakeholders at meetings and workshops held during August and September 2003 as well as the Australian NHVAS. These principles are as follows:

Objectives. The objectives of the project are to increase transport efficiency (and therefore global competitiveness), reduce road infrastructure damage due to overloading, improve road safety and reduce the costs of law enforcement.

Supply chain. The program is aimed at transport operators as well as consignors and consignees.

Simplicity. Rules, measurement and record keeping must be kept simple. Existing mechanisms should be used to keep costs low and avoid unnecessary audits.

Uniformity and consistency. National and other industry programs should as far as possible be implemented on a uniform and consistent basis.

Industry involvement. The road transport industry, including consignors and consignees, should be involved in the development, implementation and operation of the program.

Benefits to the transport industry. Accreditation should present tangible benefits to operators through the granting of certain well-defined incentives/concessions. Such incentives/concessions should also benefit the regulative authorities.

Non-mandatory. Participation in the program should not be mandatory. Access should be non-discriminatory and be based on criteria that are objective and relevant.

Sanctions and appeals procedures. Sanctions imposed within the program should be appropriate to the offence. A set of graduated sanctions should be available.

Identification and promotion. Vehicles, drivers and hauliers participating in the program should be easily identifiable by enforcement agencies.

Review. The program should be subject to review and improvement on a continuous basis.

Rules of compliance

The rules of compliance for accreditation were also developed through an extensive consultation process with stakeholders in the timber industry as well as government (national and provincial) representatives. The major rules address the following aspects of the program:

- Vehicle inventory
- Vehicle mass and load securement
- Vehicle maintenance and safety
- Driver wellness (including health and fatigue)
- Training and education
- Records and documentation
- Audits

Most rules of compliance are generic and would be applicable in most transport industries. However it is envisaged that “Codes of Practice” will be developed to address industry-specific requirements.

Incentives

Because the RTMS is a self-regulation scheme, and thereby non-mandatory (which is also the Australian approach), it is necessary to identify and adopt incentives or concessions that will encourage operators to participate in the scheme.

The first incentive to be accepted by the KwaZulu-Natal and Mpumalanga provincial authorities is the principle of “weigh-less”, i.e. limiting the weighing of accredited operators’ vehicles to spot checks, preferably when the weighbridge is not busy. These operators have already benefited from reduced delays at provincial weighbridges and roadside checks. The regulative authorities also benefit by being able to focus their law enforcement efforts on non-compliant operators.

The second incentive to receive support is the introduction of Performance-Based Standards (PBS) vehicles to increase payload efficiency without compromising vehicle safety and infrastructure protection. The National Department of Transport has approved a demonstration project that has been launched in the timber industry. Two demonstration vehicles were designed during 2006/07 and manufactured during 2007. These vehicles are based on the Australian PBS guidelines, and will be monitored for a minimum period of three years. The national Department of Transport will monitor the project closely to determine the feasibility of rolling it out as a national incentive.

Other possible incentives that are being investigated include discounts on vehicle insurance premiums and discounts on toll fees.

Vehicle load monitoring

An important aspect of the project is the load monitoring performed (in the case of the timber project) at the consignee weighbridges. The primary purpose of the weighing is to monitor the payload of each vehicle on delivery at the pulp mills. Currently, only the vehicle or combination mass is recorded, as the mills have platform rather than multi-deck scales. Thus only the total vehicle or combination mass and not the individual axle and axle unit masses are measured and monitored.

A future development in the project could be the requirement for multi-deck scales in place of platform scales. The weighbridge data is made available to the project team, which allows the monitoring of overloading and under loading by operator and by mill. The standard deviation of the loads is also determined per operator, which gives an indication of the degree of control on the vehicle loading procedure. This enables a certain amount of benchmarking to be done and reporting on best and worst practice in the industry.

The tare masses of the various vehicle combinations are also monitored, again giving an indication of good practice. For example, the tare mass of seven-axle vehicle combinations (1222) used for transporting timber has reduced from approximately 27 tons in 1992 to less than 17 tons in 2002. This has resulted in an increase in the legal payload of 34 percent. Some of the old designs are still in operation, forcing transport operators using these to overload in order to match the higher payload of the newer, lighter designs.

Although not considered as one of the rules of compliance, a prerequisite for becoming an accredited operator is that all production vehicles must be coded (which enables the monitoring process) and that 96 per cent of all vehicle/combination masses must fall within the legal load plus the tolerance for a minimum of three consecutive months. Opinions have been expressed that allowing 4 per cent of vehicle trips to be prosecutable (more than 5 percent overloaded) is unacceptable, and that no vehicles of an accredited operator should be found to be prosecutable. However, a pragmatic approach has been adopted initially. In any event, an improvement by an individual operator from 40 percent (or as much as 100 percent) of vehicle trips being prosecutable to less than 4 percent is a significant improvement! These statistics would never be observed at provincial weighbridges, as in most cases less than 5 percent of all vehicle trips are weighed at provincial weighbridges and in addition, there are numerous routes in the country where no overload control is done at all.

Phases of accreditation

Three phases of accreditation have been defined as part of the pilot project:

Application. During the application phase, the transport operator is visited by one of the current service providers to discuss the Heavy Vehicle Load Management System manual. The transport operator also commences with meeting the requirements of the rules of compliance. These include compiling an inventory of nominated vehicles, implementing some form of vehicle loading control, as well as vehicle maintenance procedures, developing a plan for driver training according to the prescribed standards, identifying responsible persons who will be involved in the program and ensuring that the necessary records and documentation are in place and are kept up to date.

In the case of “mass” industries, monitoring of the vehicle loads either at the origin or destination would commence. At this stage the prerequisite for advancing to the pre-accreditation phase is to achieve a minimum of 96 percent of vehicle combination masses complying with the legal load plus the 5 percent tolerance for three consecutive months.

Pre-accreditation. At this stage of the project, the RTMS has not been implemented through the South African National Accreditation System

(SANAS). Audits are currently being conducted by a registered auditor, and four transport operators have been pre-accredited to date.

Accreditation. Operators will be awarded full accreditation once the system has been implemented through the South African National Accreditation System (SANAS). Audits (and certification) will then be carried out by SANAS-approved accreditation bodies. Monitoring of the vehicle loads will continue during the accreditation phase. Annual audits will be required by an auditor from a SANAS-approved accreditation firm.

Implementation results

Since vehicle monitoring started in November 2002, the incidence of prosecutable vehicle overloading (greater than 5 percent) in the timber industry has reduced by 40 and 45 percent. Figure 6.1 shows the reduction in overloaded vehicles (exceeding the 5 percent tolerance) in the timber industry from November 2003 as a percentage of the base in November 2002. Furthermore, the average overload per vehicle has reduced by 14 percent during the same period. These figures are impressive, particularly as only four transport operators have been accredited to date. Others are in the application phase, preparing for an external audit. The success of the project is to a great extent due to the active involvement of the consignees and consignors. At certain mills a four hour delay penalty has been introduced which is applied to any vehicle that arrives at the mill and is found to be more than 5 percent overloaded on total vehicle mass. At these mills, improvements of more than 80 percent in terms of incidence of vehicle overloading have been observed.

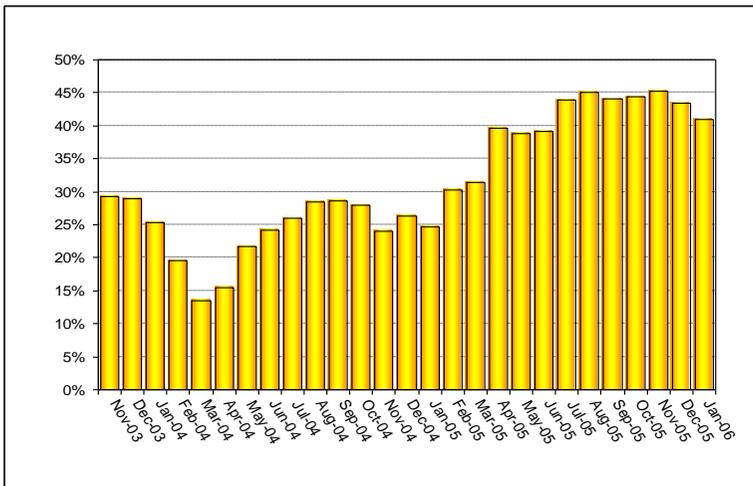
The enactment of the pending legislation regarding the responsibility of the consignor or consignee in terms of ensuring that vehicles are legally loaded is likely to add significant momentum to the RTMS initiative.

Further developments

The successful implementation of the RTMS in the forestry industry led to various stakeholders identifying the need to establish a national RTMS steering committee in order to expand the program to other industries. A national RTMS workshop was held in June 2004 during which issues such as the vision, mission, mandate, objectives, structure

and terms of reference of the proposed committee were discussed and debated. Stakeholder and organizations represented at the workshop included the Department of Transport, SANRAL, Forestry South Africa (FSA), the Institute for Commercial Forestry Research (ICFR), SA Cane-growers (SACGA), Road Freight Association (RFA), NPI and CSIR. The first meeting of the national committee was held in July 2004 and one of the first tasks was to compile a national RTMS strategy. During the next 12 months various industries were approached with a view to participating in the RTMS initiative. By the end of 2005, a number of these industries had indicated a willingness to participate. These included the Chamber of Mines, Sabita, ASPASA, SARMA, SACGA and the pulp, paper and board industry (distinct from the timber industry).

Figure 6.1. Reduction in incidence of overloading exceeding the 5% tolerance limit.



In November 2005, the national steering committee identified the need to revise the strategy document and in particular consider the possibility of a name change, as it was felt that the name “Load Accreditation Program” (LAP) put too much emphasis on the aspect of vehicle overloading without recognizing the other important aspects of vehicle maintenance, driver wellness and productivity. The committee finally decided to rename the initiative the Road Transport Management System. A Technical Working Group was appointed with the task of drafting the new RTMS strategy.

As part of this strategy, the South African Bureau of Standards (SABS) was approached in August 2006 to develop the RTMS as a national standard. Through a consultative process, it was decided to first publish the standards as a “Recommended Practice” (ARP 067), Part 1 being the recommended practice for Operators. An SABS Technical Committee, STANSA TC181B: Road Transport Management Systems, was constituted in October 2006 and a Working Group appointed to transform the LAP standards developed by the CSIR for the forestry industry into an SANS Recommended Practice. The ARP 067-1:2007 Part 1: Operator Requirements – Goods (9) was published by Standards South Africa in February 2007 and the Working Group is currently preparing Parts 2 and 3, RTMS standards for consignors and consignees.

Way forward

There is potential for major economic benefits to the road transport industry in Southern Africa as a whole as a result of the reduction in accelerated road infrastructure deterioration due to overloading, an improvement in road safety and an increase in vehicle payload efficiency.

In view of the success with RTMS to date, one of the aims of the South African Department of Transport is to roll out this initiative to other industries, and to eventually establish a national accreditation system for the whole of the road transport industry.

The RTMS has the potential for application in a number of countries in the region focusing not only on timber but other industries such as the quarry, cement, coal industries.

Conclusions

The following general conclusions can be drawn:

- The Road Transport Management System is a significant initiative in self-regulation in the South African road transport industry;
- It provides an opportunity for consignors, consignees and transport operators to lead the way in a new generation of alternative compliance;
- It also provides an opportunity to promote professionalism in heavy goods vehicle transport;

- The likelihood of success is enhanced because of the strong support from government (Department of Transport, SANRAL and the provinces) for private sector initiatives;
- There is a potential for major economic benefits to the road transport industry in South Africa as a whole as a result of a reduction of accelerated road infrastructure deterioration due to overloading, an improvement in road safety and an increase in vehicle payload efficiency.

One of the aims of the Department of Transport is to roll out this initiative to other industries, and eventually to establish a national accreditation system for the whole of the road transport industry.

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BOTSWANA/SOUTH AFRICA: Cross-border overload controls

Introduction

Background

For many years, the Groblersbrug/Martin's Drift border post has been the major crossing point for overloaded vehicles leaving South Africa. The popularity of this border post for this purpose has partly been due to some transporters wishing to avoid the tighter controls at the Beitbridge border post between South Africa and Zimbabwe. In so doing, northbound commercial vehicles have been able to exit the Groblersbrug/Martin's Drift border post and to traverse routes in Botswana and Zambia, and sometimes further north to the Democratic Republic of the Congo, where control of overloading has generally been lax.

With the construction of the new Martin's Drift-Sephope road in Botswana, a new gateway to the north was opened which provided an alternative route to Beitbridge for northbound vehicles. Thus, not surprisingly, the number of commercial vehicles using the Groblersbrug/Martin's Drift border post has grown steadily in the past few years and is currently of the order of 150 to 200 vehicles per day. Unfortunately, this border post has also become a major crossing point for overloaded vehicles. Hence, the curbing of this malpractice has become of paramount importance.

Organizations involved

Three organizations have been involved, either directly or indirectly, in overload control operations at Groblersbrug, albeit from different perspectives. They are (1) the Weighbridge Unit, (2) South African Revenue

Services (SARS) – Customs Unit and (3) the Cross-Border Road Transport Agency (CBRTA).

Weighbridge Unit

Function: The primary function of the Weighbridge Unit is to enforce axle load and vehicle/combination mass limits and prosecute offending carriers. Its main objective is to prevent overloaded vehicles from operating on the road network and, where vehicles have already travelled on the network, to prevent them from travelling further unless the load can be re-distributed or off-loaded to comply with the legal limits.

The overload control function has been carried out by provincial traffic police using legislated standard levels of fines which are applied to vehicle limits at the discretion of local magistrates. By far the largest number of overloading offences has been settled as Admission of Guilt fines with only a limited number being referred to the courts.

Management: The weighbridge has been managed by one supervisor and operated by a staff of four on a rotational basis. This compliment of staffing has been insufficient to ensure reliable manning of the weighbridge on a full-time basis. Lack of on-site accommodation has meant that staff had to travel some 86 km to and from work every day.

Facility: The weighbridge facility is located some 8 kilometers from Groblersbrug, just off the western side of the main road, in a fenced-in compound measuring approximately 50 m x 50 m. There have been no designated off-loading facilities where vehicles might be parked off for redistributing or off-loading their overload to another vehicle. Such a parking area is desirable, as parking-off is one of the most effective means of combating overloading.

Equipment: The weighbridge is a 3.2 m x 4 meter axle unit scale capable of weighing any axle or axle unit of a truck (single axle, tandem or tri-dem) with approach slabs on either side. However, the unit has suffered periodically from breakdowns during which period commercial vehicles have proceeded directly to the border for Customs clearance without being weighed. There has also been some doubt as to whether regular inspections, calibration and maintenance of the weighbridge have been carried out regularly.

Operations: Weighbridge operations have taken place from 08.00 to 17.00 hours but apparently not on a reliable, full day basis due to insufficient manpower resources. Weighing operations have generally commenced one hour after the opening of Customs and have ceased one hour before the time of closing of Customs. Commercial vehicles passing the weighbridge after 17.00 hours were not weighed but, nonetheless, cleared by Customs and allowed to proceed to the border. These vehicles are often overloaded.

Weighing tolerance: Prior to June 2006, a tolerance of 5 percent of the maximum legal axle weights was permitted prior to the application of a penalty. If the vehicle was found to exceed the 5 percent tolerance, the penalty was applied for the total overloaded weight. The 5 percent tolerance has been granted to obviate disputes about possible variances in scale accuracy as well as possible changes to payload weight during transit. In June 2006, the allowable tolerance on total vehicle mass, total combination mass and the Bridge Formula was reduced from 5 percent to 2 percent in South Africa. The tolerance for axle and axle units has remained at 5 percent.

Weighbridge printout: The axle loads are displayed on a digital reader linked to the weighbridge. However, there has been no electronic printout of the weighbridge report and the axle loads have had to be filled out manually on a printed form. The total vehicle/combination masses were obtained by summing the individual axle and axle unit masses.

Communications: Lack of an efficient communication link between the Weighbridge Unit and either Customs or the CBRTA has made it difficult for these organizations to communicate with each other as regards offending vehicles.

Customs

Function: The main function of Customs is to regulate and process the movement of goods across borders, with a primary focus on revenue collection. Customs are not particularly interested in the legalities of axle mass or total vehicle/combination mass limits and their officers do not have the authority to direct a vehicle to be weighed. However, they are aware of the overloading that is taking place at Groblersbrug and are prepared to collaborate with the Road Transport inspectors and the

Weighbridge Unit in helping to curb the problem, particularly as it would assist them in cutting down on under-declaration of goods.

Operations: Customs operations have taken place from 08.00 to 18.00 hours, with the closing time being one hour later than that of the weighbridge. Customs officials can take action against transporters that under-declare their loads but not on the actual vehicle loadings in terms of compliance with the legal limits.

Collaboration: There has been apparently little, if any, effective collaboration between the Weighbridge Unit and Customs officials with regards overload control. As a result, there has been uncertainty on the part of Customs in dealing with overloaded vehicles, particularly those coming from Martin's Drift. Indeed, vehicles have been allowed to cross the border into South Africa regardless of whether they are overloaded or not.

The Cross-Border Road Transport Agency-CBRTA

Function: The CBRTA has been delegated the function of managing cross-border traffic on behalf of the national Department of Transport. The agency has employed Road Transport Inspectors for this purpose and who have been empowered to enforce the law relating to international road transport.

Operations: The CBRTA inspectors can use their powers under criminal procedure legislation to direct commercial vehicles to weighbridges on the grounds that transport permits require commercial vehicles to comply with road traffic laws which include vehicle load limits. Thus, in principle, the CBRTA inspectors have been empowered by law to ensure that vehicles are legally loaded as a basis for crossing the border and, moreover, have been in a position to revoke transport permits where there has been habitual overloading. However, in practice, the various prevailing problems such as lack of weighbridge clearance certificates, and the indifferent and unreliable operations prevailing at the weighbridge facility, have limited their ability to play a more effective role in controlling overloading.

Overloading malpractice

It was not uncommon for unscrupulous drivers to simply by-pass the Groblersbrug weighbridge without being weighed, to proceed to Customs for processing and then to cross the border into Botswana overloaded. This malpractice has been facilitated by the fact that the Customs opening hours (06.00 hrs) and closing hours (22.00 hrs) were earlier and later respectively than the weighbridge opening hours (08.00 hrs) and closing hours (18.00 hrs).

Summary

The activities of the Weighbridge Unit, Customs and CBRTA organizations, with regard to overload control, were previously not streamlined in a number of respects, notably:

- Little formalized collaboration between the three organizations
- No overload control documentation for use by the three organizations
- No mutually agreed procedures for controlling overloading
- Different operating hours

As a result of the above, the potentially strong, complementary, more effective role that could have been played by the Weighbridge Unit, Customs and CBRTA organizations in overload control have been diluted and overloading has been rife. However, following meetings with them to introduce the CBOCS pilot project, these organizations have agreed to collaborate more closely in future.

CBOCS system design and review of operations*Design of pilot project*

Main objective: The objective of the CBOCS pilot project was to improve the effectiveness of the existing overload control operations at very little, if any, additional cost by adopting a more collaborative, streamlined and professional approach involving all three organizations operating at Groblersbrug. This design of the system envisaged to

- More clearly defined roles, closer working relationships and streamlining of operations between the Weighbridge Unit, Customs and CBRTA;

- Rely on both physical weighing of vehicles and imposition of administrative disincentives and penalties under the SACU MoU;
- More clearly defined weighing procedures;
- Better documentation of output of weighing procedure (Weighbridge Clearance Certificate);
- More formalized communication procedures between the Weighbridge Unit, Customs and CBRTA.

Attributes: In order to meet the objectives of the pilot project at minimum cost, it was agreed with stakeholders that the system design for the CBOCS should be:

- simple to administer
- not incurring significant costs
- effective in terms of curbing overloading
- requiring a short lead time for implementation
- supplementing rather than replacing existing criminal procedures for overloading
- not causing any additional delays to commercial vehicles

Operational aspects

Operating hours: The weighbridge operating hours would be synchronized with Customs as follows: weighbridge operations to commence at 06.00 hours instead of 08.00 hours and to conclude at 22.00 hours instead of 18.00 hours.

Calibration of equipment: The axle unit scale to be calibrated every six months and the Calibration Certificate to be displayed for public view.

Erection of directional signs: Special eye-catching signs marked “Zero tolerance to Overloading” and indicating that “Only vehicles with a Weighbridge Clearance Certificate stamped ‘vehicle legally loaded’ will be allowed to transit this border” to be erected at the entrance to both the weighbridge and Customs.

Overload control procedure: Following discussions with all stakeholders, the CBOCS procedure that was agreed upon and implemented may be summarized as below.

1. **Commercial vehicles:** All commercial vehicles proceeding to the Groblersbrug /Martins Drift border post must stop at the weighbridge to be weighed and, if legally loaded, to be issued with a Weighbridge Clearance Certificate for presentation to Customs;
2. **Weighbridge Unit:** Weighbridge staff must weigh all vehicles proceeding to the Groblersbrug/Martins Drift border post for compliance with legal axle mass and vehicle/combination mass limits.

Only if the axle and axle unit masses and vehicle/combination mass comply with the corresponding legally permissible masses, would a Weighbridge Clearance Certificate be issued to the driver of the commercial vehicle.

In the case of an illegally loaded vehicle, the driver must take the necessary action to adjust the load or off-load to achieve compliance with the legal limits. After so doing, the vehicle weighing process and related activities can be repeated.

3. **Customs:** Only upon production of a Weighbridge Clearance Certificate would the driver's documentation be processed by Customs officials. Following Customs clearance, the driver will then be issued with an officially stamped Gate Pass which will allow the vehicle to cross the border.
4. **CBRTA:** Weighbridge Clearance Certificates will be monitored by CBRTA officials and used as a regulatory tool for issuing permits. For example, a first overload offence may trigger a written warning threatening suspension or revocation of a permit; a second offence may trigger suspension or revocation of the permit while a third offence may bar a transport operator from obtaining additional permits either for a stated period of time or permanently.

Customs procedures: By internal arrangements, the Customs procedures were amended such that Customs would require the driver of any commercial vehicle to produce a Weighbridge Clearance Certificate as a basis for processing of his documentation for crossing the border.

Management aspects

Staffing: The number of staff at the Weighbridge Unit to be increased so as to provide two 8-hour working shifts from 06.00 – 14.00 hours and from 14.00 – 22.00 hours.

Collaboration amongst stakeholders: The collaborative arrangements between the key stakeholder organizations (Weighbridge Unit, Customs and CBRTA), was formalized in a Memorandum of Agreement which clearly indicated the roles to be played by each of the organizations and the procedures to be followed in dealing with overload control operations at the border post

Implementation aspects

Training: A short training program was carried out for selected officials from the Weighbridge Unit, Customs and CBRTA in the operation of the pilot project.

Review of operations

Operational aspects

1. **Operating hours:** The weighbridge operating hours have now been synchronized with Customs and the unit now operates between 06.00 and 22.00 hours.
2. No undue delays to commercial vehicles related to introduction of the weighbridge clearance certificate were observed at either the weighbridge or Customs. This observation was confirmed by discussions held with a number of drivers.
3. **Calibration of equipment:** The axle unit scale is calibrated regularly but the Calibration Certificate is not yet being displayed in the weighbridge office.
4. **Erection of directional signs:** These specially designed directional signs have not yet been erected at either the weighbridge or Customs.
5. **Overload control procedures:** The overload control procedures are working smoothly and generally in compliance with the sys-

tem design. However, the CBRTA is not yet playing the role envisaged in the system design.

6. **Customs procedures:** The Customs internal procedures have been amended as envisaged in the system design and their role in the control of overloading is now working smoothly.

Management aspects

1. **Staffing:** The number of staff at the weighbridge Unit has now been increased from four to eight which allows a two-shift operation covering the 16 hours operations of Customs.
2. **Collaboration amongst stakeholders:** There is now close collaboration between the Weighbridge Unit and Customs in the operation of the CBOCS. However, the CBRTA is not yet playing the role envisaged in the CBOCS.

Implementation aspects

1. **Training:** The relatively simple “training” that was carried out for the weighbridge and Customs staff, in terms of familiarizing them with the CBOCS process and procedures, has served its purpose in that both organizations know exactly what is required of their staff in operating the CBOCS.

General observations

Initial pilot operations

There were inevitable teething problems at the start of the CBOCS pilot project. These included delays to vehicles due to the initial late opening of the weighbridge and the resulting back-up of vehicles waiting to be weighed before they could proceed to Customs to be processed. However, once the Weighbridge Unit embarked on a two-shift system, this problem was overcome.

Customs procedures

Although the Customs procedures to accommodate the CBOCS process have been achieved by an amendment to their internal procedures, and although the process has experienced no problems to date, it would,

nonetheless, be preferable if this arrangement could be formalized by a change in the Customs Act. In this regard, the Customs Act allows Customs to act as an agent of other government departments. As such, it would be informed by the Road Traffic Act that falls under the National Department of Transport, if that Act specified the need for Customs to act as an agent of the South African National Roads Agency Limited (SANRAL) which is responsible for overload control.

Staff accommodation

The absence of staff accommodation close to the weighbridge results in staff having to travel some 86 kilometers to and from work each day, a factor that is not conducive to efficient operations. However, this shortcoming does not significantly affect the pilot project. In any case, in the longer term, there might be merit in considering relocating the weighbridge within or very near to the Customs compound to further streamline cross-border operations amongst the three agencies.

Weighbridge equipment

In comparison with a multi-deck scale, the existing single axle unit scale is not ideal for weighing multi-axle vehicles with combination masses of the order of 56 tons, errors tend to be introduced in the separate weighing of a number of individual axles and axle units. Nonetheless, with careful weighing, it is adequate for the purpose intended.

Potential for diversion

With tighter overload control procedures in place at the Groblersbrug-Martins Drift border post, there may well be a temptation for vehicles to avoid this border post and to divert to alternative border crossings at Parr's halt (approx. 76 km south-west of Groblersbrug or Zanzibar (approx. 80 km north-east of Groblersbrug). Both of these alternative border posts are designated as "non-commercial" and, strictly speaking, should not be used by commercial vehicles. However, in practice, the potential is there for such crossing and the South African and Botswana Customs authorities will be alerted to this situation.

Impact of CBOCS pilot project

Weighing statistics

The impact of the introduction of the CBOCS plot project in December 2004 may be deduced from the weighing statistics for the Groblersbrug weighbridge during the period April 2004 to March 2006. These statistics are summarized in Table 3.1.

Table 3.1- Groblersbrug weighbridge: Weighing statistics

Item	Mean Value (Month)		Range (Month)	
	Apr 04-Nov 04	Dec 04-Mar 06	Apr 04- Nov 04	Dec 04-Mar 06
Vehicles weighed	323	1691	120-519	976-2374
Vehicles overloaded	143	247	42-268	48-465
Vehicles charged	25	44	15-37	25-61
Vehicles within 5% tolerance	118	202	24-231	20-405
Overload % above 5% tolerance	8.2	2.9	5.5-12.5	1.0-6.2

As would be apparent from weighing statistics presented in Table 3.1, the impact of the introduction of the CBOCS plot project has been significant in that:

1. The average number of vehicles weighed has increased by a factor of over four. This suggests that vehicles that may have previously by-passed the weighbridge, had their documentation processed by Customs and subsequently crossed the border were not able to do so after the introduction of the CBOCS pilot project.
2. The number of overloaded vehicles has increased by 42%. This is most likely due to the larger number of vehicles that are now being weighed compared to previously.
3. The number of vehicles charged for being overloaded has increased by 76 percent. This the larger number of vehicles that are now being weighed compared to previously.

4. The number of vehicles weighed that are within the 5% weighing tolerance has increased by 71 percent. This increase in legally loaded vehicles is most likely due to the more stringent measures now in place for preventing overloaded vehicles from crossing the border.
5. The incidence of overloaded vehicles in excess of the 5 percent tolerance has reduced dramatically from a mean value of 8.2 percent to 2.9 percent. This bottom line statistic indicates quite clearly the very positive impact that the CBOCS pilot project has had in terms of reducing overloading of north-bound vehicles bound for Botswana and further northwards via the Groblersbrug/Martins Drift border post.

Conclusions

General

The various minimum measures required to ensure the smooth operation of the CBOCS pilot project have been implemented by the responsible stakeholders. These minimum requirements have included:

- A champion and committed person to drive the CBOCS in each stakeholder organization;
- A commitment to undertake the project by all stakeholders;
- Close collaboration between the key parties – the Weighbridge Unit and Customs – in the operation of the CBOCS to avoid unnecessary delays at the border when the weighbridge system fails for whatever reason and WCC cannot be issued;
- The introduction of a weighbridge clearance certificate (WCC) stamped “vehicle/combination legally loaded” and signed by the responsible weighbridge officer (N.B. The pilot project allowed the manual production of the WCC, but this cannot be accepted for future systems when an automatically generated certificate will be necessary if fraud and corruption, which are prevalent in the region, are to be minimized);
- An amendment to Customs internal procedures which makes it mandatory for all drivers of commercial vehicles to present a weighbridge clearance certificate as a pre-condition for processing his Customs documents;

- Synchronization of working hours between the weighbridge Unit and Customs whereby the weighbridge operating hours are at least as long as the border opening hours (this may require a two-shift operation and not just overtime of a single-shift operation);
- Customs to be advised when the weighbridge is not functioning so that in such a situation drivers can still be processed to cross the border.

Merits and achievements

The merits and achievements of the CBOCS pilot project may be summarized as follows:

- It has been relatively simple to administer
- It has been implemented without incurring any significant costs to either the Weighbridge Unit or to Customs;
- It has been effective in terms of significantly reducing the incidence of overloading;
- It has required a relatively short lead time for its implementation;
- It has supplemented rather than replaced existing criminal procedures for overloading
- It has not caused any additional delays to commercial vehicles;
- It has been beneficial to Customs in terms of minimizing the scope for under-declaration of goods.

Additional requirements and enhancements

The following measures, although not absolutely necessary for the successful operation of the CBOCS, are, nonetheless, desirable:

- The automatic computerized generation of a WCC, which should not produce a WCC if the vehicle is overloaded. This will reduce the scope for malpractice in the recording of axle loads.
- The introduction of a Weighbridge Management System capable of generating various axle load related and other statistics including the easy detection of habitual offenders.
- Proof of the regular (approx. every six months) calibration of the weighbridge and display of the calibration certificate at the weighbridge.

- The replacement in due course of the existing 3.2 x 4 meter axle unit scale with a 22 meter multi-deck scale capable of weighing all axles, axle units and the total vehicle/combination mass simultaneously;
- The erection of special signs marked “Zero tolerance to overloading” and indicating that “Only vehicles with a Weighbridge Clearance Certificate stamped ‘vehicle legally loaded’ will be allowed to transit this border” to be erected at the entrance to both the weighbridge and to Customs.
- The electronic linkage between the Weighbridge Unit and Customs so that the weighbridge Clearance Certificates can be sent to Customs in advance of the arrival of the vehicle.
- The provision of housing for the weighbridge staff close to the weighbridge office so as to obviate the need for long-distance travel by the staff.
- The more active role of the CBRTA to identify persistent and to revoke their transport permits, where warranted.

Recommendations and way forward

Based on the outcome of the review of the CBOCS pilot project it is apparent that the pilot project has been a success in that it has achieved the main objective set initially by stakeholders – the reduction of overloading at the Groblersbrug-Martins Drift border post. This objective has been achieved effectively and at no significant additional cost to the operations of the Weighbridge Unit and Customs or disruption to commercial traffic. Thus, the clear recommendation is that the system should, in principle, be implemented gradually at all the border posts of the SADC region.