INTERVENTIONS TO IMPROVE FREIGHT VEHICLE ROAD SAFETY IN ETHEKWINI MUNICIPALITY

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ABSTRACT

The eThekwini Transport Authority (ETA) is currently developing and pursuing a heavy vehicle safety intervention strategy in order to reduce heavy freight vehicle crashes. The current challenge the eThekwini Municipality faces is unsafe roads due to unroadworthy heavy vehicles, fatigued drivers, reckless driving, speeding, and a disregard of road rules. Currently the strategy includes two main elements:

- Enhancing the capacity of police officers by providing them with technical knowledge regarding the operation of heavy vehicles; and
- Educating the freight industry towards becoming a safer road user that will lessen the burden on the authorities.

1. INTRODUCTION

The eThekwini Municipality's vision is to be Africa's most caring and liveable city, where all citizens live in harmony by 2030 (eThekwini Transport Authority; Integrated Transport Plan). Heavy vehicle transport in South Africa is playing a pivotal role in our logistic system. Today, more than 80% of goods are being transported by road. As the demand for goods increases this adds pressure to our road networks. Overloading, poorly maintained vehicles, and limited cooperation from the freight industry make it difficult to reduce heavy vehicle crashes. The demand placed on eThekwini's road infrastructure is significant, due to eThekwini being a port city with numerous freight trips originating and terminating here. The current challenges the eThekwini Municipality faces are unsafe roads due to un-roadworthy heavy vehicles, fatigued drivers, reckless driving, speeding, and a disregard for road rules. An additional challenge is the difficulty in verifying foreign drivers' licences and impounding foreign vehicles that are unroadworthy.

The success of the heavy vehicle safety intervention strategy depends on an integrated approach with all stakeholders working to achieve an efficient, sustainable freight industry which will result in a safer road system. The strategy currently focuses on training programmes designed for the freight industry, heavy vehicle drivers, enforcement agencies and other stakeholders.

The paper begins by discussing the current status of heavy vehicle road safety in eThekwini and describing the stakeholders that need to be involved to ensure the success of any interventions. It then focuses on existing successful interventions including enhancing the capacity of police officers, educating the freight industry on road safety, and a number of other interventions.

2. THE STATUS OF HEAVY VEHICLE ROAD SAFETY IN ETHEKWINI

The Road Safety Branch of the eThekwini Municipality maintains a comprehensive database of all crashes that occur within the boundaries of the municipality. Analysis of heavy vehicles crashes recorded over the period 2014 to 2016, has identified the following key challenges:

- The number of heavy vehicle crashes in eThekwini Municipality is unacceptably high. For the three years from 2014 to 2016, there were 7 321, 7 397 and 7 078 crashes involving heavy vehicles in the respective years. On average 20 heavy vehicles crashed each day during the three years.
- Some of the key crash types over the three years are head-on collisions (57), rear end collisions (4 481), and side swipe same direction collisions (8 023).
- Crashes involving heavy vehicles have resulted in 165 deaths. 75 of these deaths occurred in crashes involving pedestrians and heavy vehicles.
- The majority of the crashes occurred during the off-peak period and in good weather conditions.

The Road Safety Branch and the eThekwini Metro Police conduct inspections and enforcement of heavy vehicles travelling on the municipality's road network. Road safety assessments of the road infrastructure on those routes frequented by freight heavy vehicles are also carried out. The following are the most common problems:

- Unroadworthy, overloaded heavy vehicles and excessive speeding which pose a serious threat to road and public safety.
- Driver fatigue due to driving for too long without rest breaks.
- Damage to the infrastructure leading to unsafe road conditions.
- Inexperienced and unlicensed drivers
- Limited oversight of the movement of hazardous chemicals.

Due to these unsafe conditions existing in road freight, the municipality is in the process of developing a plan to ensure the safety of heavy vehicles. However, a number of interventions has already started and are discussed in this paper.

3. HEAVY VEHICLE ROAD SAFETY STAKEHOLDERS

In order to deal with the challenges identified above, the ETA has determined that any solution will require the commitment of all stakeholders, including the freight industry, law enforcement agencies, and all other stakeholders to develop a heavy vehicle safety intervention. This plan will hold each stakeholder responsible for creating a safe logistic operational system. The main stakeholders are:

- Freight companies;
- South African Police Services;
- Road Traffic Inspectorate (RTI);
- eThekwini Metro Police;
- Cross Border Road Transport Agency;
- Transnet Harbour security personnel;
- Trade unions;
- eThekwini Transport Authority;
- National Department of Transport;
- KwaZulu-Natal Department of Transport;
- Road Accident Fund;
- Occupational health practitioners;
- Wellness practitioners;

- Tyre and Brake Watch Team;
- Original Equipment Manufacturers (OEMs); and
- Road Transport Management System (RTMS).

4. ENHANCING THE CAPACITY OF POLICE OFFICERS

The eThekwini Metro Police are responsible for a wide range of policing functions but have limited training in the specialised skills required for heavy freight vehicles. Therefore, in order for freight vehicle enforcement to be effective, it was necessary to enhance the capacity of police officers who are involved in freight enforcement by providing them with additional specialised training.

4.1 Brake and Tyre Watch Initiative

4.1.1 *Practical and theory training*

The Brake and Tyre Watch Initiative is a public/private initiative conducted by FleetWatch Magazine and their partners to train and develop police officers on the major components of heavy vehicles, because many police officers have insufficient technical knowledge to effectively enforce the laws and regulations regarding heavy vehicles. The Brake and Tyre Watch initiative provides all levels of officers with a high level of technical skill to be well acquainted with all the major working parts of heavy vehicles. This training provides inexperienced officers with the confidence to carry out roadworthy checks on heavy vehicles on the road. It also strengthens the technical skills of more experienced officers.

Figure 1: Day One Theory session

Figure 2: Day Two Group practical training

Brake and Tyre Watch under the auspices of FleetWatch Magazine held two workshops in Durban on the 12 and 13 August 2015, and 24 and 25 May 2017. Both workshops included a day of theory and a day of practical training. A total of one hundred and ninety officers who are involved in freight enforcement were trained. These officers are expected to transfer their skills to their colleagues and additional ongoing training is planned.

4.1.2 *Method of training*

During the practical training, heavy vehicles were pulled off the freeway and escorted to the roadworthy test station where officers were shown how to conduct bumper to bumper roadworthy checks. Two provincial RTI test stations were utilized and officers from these stations also joined the training programme. The officers were placed in different groups to identify defects on heavy vehicles and each group had a technical specialist as team leader.

This training initiative provided specialized training in air brake systems; brake boosters; slack adjusters; parking brakes; fifth wheel; trailers; body suspensions; and the manufacturer's data plate. Each group was able to ask questions during the practical and the theory training sessions. At the end of the group sessions officers were encouraged to enter a competition regarding the training they had received over the two days. Each group

entered one team member to compete with others and after an arduous round of questions a winner was chosen and a prize was awarded to that team. The officers, after being trained in heavy vehicle components, were provided with sufficient knowledge to identify defects on heavy vehicles and have the confidence to stop and inspect heavy vehicles.

4.1.3 *The benefit of the training initiatives*

The training sessions that were initiated by Brake and Tyre Watch and other strategic partners have proven to be successful. Police officers are no longer intimidated when dealing with heavy vehicles. This is reflected in the number of fines issued after the training, as shown in Figure 3.

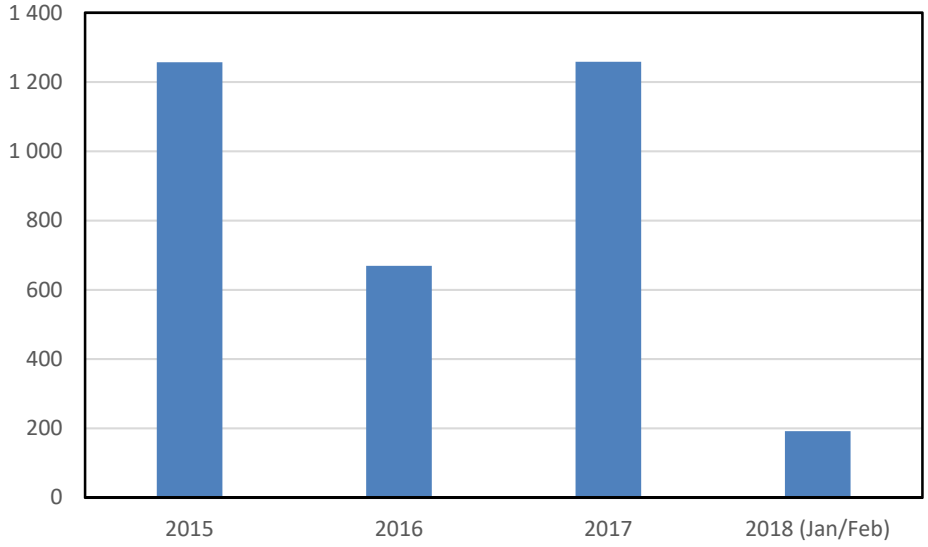

Figure 3: Fines Issued to Heavy Vehicles (2015 to February 2018)

In 2015 and 2017 over 1 200 fines were issued to heavy vehicles each year. The Metro police encountered various operational challenges during 2016, which resulted in less enforcement being conducted in 2016. Enforcement is continuing in 2018 and the prosecutions in 2018 (Figure 3) included 119 vehicle licence suspensions. A total of 3 272 fines were issued between 2015 and February 2018.

5. EDUCATING THE FREIGHT INDUSTRY

Human error is cited as the most significant contributor to road traffic crashes in South Africa. Yet little is known about the human factors that are seemingly the main factor contributing to the carnage on our roads. It has been estimated that the human factor contribution in South African crashes is approximately 83% (Gainewe & Masangu, 2010).

Nordengen estimated that in 2009, there were approximately 13 fatalities per 100 million vehicle kilometres travelled (mvkmt) by heavy goods vehicles. This is very high when compared to many developed countries such as the United States of America, the United Kingdom, Germany, Australia and New Zealand, where the rate is between 2 and 4 fatalities per mvkmt (Nordengen, 2009).

There are two types of operations in and around the port. The one operation is from the port to the various warehouses and the other is from the port to inland destinations. The operators seem to utilize older vehicles for the short distances and use the newer vehicles for longer distances. From interviews with drivers during enforcement operations, it appears that the short movement vehicles are in a very bad condition and the companies employ drivers who are desperate for jobs and are forced to drive these unsafe vehicles on our

public roads. Although the long-distance vehicles are generally in a better condition they still do not meet the roadworthy standards.

The municipality has taken decision to educate all municipal heavy vehicle drivers and also to offer this education to all private corporate drivers. This initiative is being sponsored by the eThekwini Municipality with no cost to the private sector.

The work of heavy vehicle drivers must be treated as a profession irrespective of short or long distance. Drivers need their skill level to be maintained through continuous training and development. There is a huge shortage of professional drivers in South Africa. Drivers have a responsibility to ensure that the vehicles they drive are in good roadworthy condition. Once the driver leaves the depot he needs to be self-reliant; fit and healthy, and have the ability to concentrate for extended periods of time. The operator, working together with the driver, must ensure that the driver has a basic knowledge of the mechanics of the vehicle. Having considered all these factors, the municipality has put together a road safety education programme for all heavy vehicle drivers at no cost to operators.

A trainer was appointed to educate drivers on the importance of road safety. The trainer was required to have the following skills and experience:

- Traffic accident investigations;
- Traffic accident reconstruction;
- Technical aspects of vehicles;
- Advance driving;
- Legislation;
- Lecturing experience;
- Traffic related research;
- The Criminal Procedure Act;
- The National Road Traffic Act; and
- Occupational Health and Safety Act.

The training was designed to positively influence every heavy vehicle driver's behaviour through the use of presentations and thereafter challenging their thinking through a question and answer session. The goal was to ensure that they would leave the training session being empowered and encouraged to exercise the proper behaviour that is required of them as professional drivers. It was emphasised that they must see themselves as "professional drivers" and it is important that the operators regard them as such.

The picture below depicts a logistic company's employees receiving road safety education from the municipality's heavy vehicle road safety educator at the eighth training session in August 2017.

Figure 4: Example of Driver Training Session

Six hundred heavy vehicle drivers were trained between April 2016 and December 2017. Driver training has continued in 2018. During these sessions the focus on those areas where the municipality is aware that drivers are behaving incorrectly such as speeding, red light violations, insecure loads, and inconsiderate driving. There is a lot of interaction between the drivers and the trainer and many of the drivers' concerns are addressed. At the end of the training, an evaluation form is then completed by the trainees to evaluate the training sessions. The feedback received indicates that drivers are enriched by this high quality training. Drivers realize that they have an important role to play and need to be more responsible not only to their companies, but to every road user, i.e. motorists and non-motorists on the road. Each attendee receives an attendance certificate with the municipality's logo and an official signature. This training programme will be shared with other municipalities in order to mitigate heavy vehicle crashes.

6. OTHER INTERVENTIONS

6.1 Road Transport Management System (RTMS) concept

This concept is being piloted with the municipality's Solid Waste fleet. The first stage, which is an evaluation of the fleet, is about to be completed. The goal is to implement RTMS throughout the municipal fleet.

The RTMS certification process is an industry-led, voluntary self-regulation scheme that encourages consignees, consignors and operators engaged in the road logistics value chain and transport sectors to implement a vehicle management system that preserves road infrastructure, improves road safety and increases the productivity of the logistics value chain. (Road Transport Management System, 2018)

The scheme also supports the Department of Transport's National Freight Logistics Strategy. Transport operators who invest in becoming RTMS accredited are recognized for their commitment to responsible business and benefit from improved safety, compliance and risk management. To date there are over 10 000 trucks nationwide that are RTMS certified but there are thousands which do not fully comply with the standard required, as shown by

the high failure rate during the Tyre and Brake Watch initiatives. With eThekwini being such an important and busy hub for trucks, a lot of these non-compliant trucks are running on eThekwini municipality's roads.

In order to achieve RTMS certification, an organization must demonstrate conformance to the stipulated requirements of the SABS standard (SANS 1395). Such conformance must be verified by an independent conformity assessment body. In the context of the road safety challenge in the region, the fundamental objective of the RTMS standard is to actively promote the concept of self-regulation wherein participating companies responsibly manage the impact of their activities, so that they present a minimal risk to other road users, the road infrastructure and their own drivers. The standard also requires that companies actively promote and prioritize road safety and make provision for optimal driver health and wellness. This concept will be promoted throughout the city's freight industry. Although this concept may not be easily bought by operators, with gentle perseverance the city is hopeful it will turn the tide against heavy vehicle crashes.

The benefits derived from the RTMS initiative are as follows:

- Reduction and minimization of overloading;
- Preventing excessive road wear and preserving the road infrastructure;
- Enhancing heavy vehicle safety on the public road network;
- Taking care of truck drivers' health (Driver Wellness Initiatives);
- Reduction of traffic violations (e.g. reducing speeding incidents);
- Improving efficiency in various industry supply chains;
- Actively promoting skills development within the transport sector; and
- Companies measuring their performance and taking responsibility for the impact of their activities.

6.2 Driver wellness

After an extensive fact-finding exercise on the causes of heavy vehicle crashes on South African roads, the Celbra Ozone Therapy Clinic has determined that driver fatigue is one of the major problems. This problem is exacerbated by the general poor health condition of the truck drivers who are plagued with lifestyle diseases such as high blood pressure, sore and swollen legs/feet, stiff joints, diabetes, acute back ache and generally stressed kidneys. All of the above problems are directly attributed to poor blood circulation which is a result of the body being in a passive posture during long hours of driving.

The clinic is situated on the N3 freeway at the Cato Ridge Truck Stop. While resting and having their meals at this location, drivers are encouraged by the staff of this facility to visit the Ozone Therapy Clinic to receive education on their well-being, diet, and the prevention of any further diseases and sickness. Interactions with drivers at the clinic has shown that many of the drivers' health issues are not well managed by their companies' wellness programmes.

Other truck stops must be encouraged to house similar clinics in order to provide drivers an opportunity to have their blood pressure checked, eyes tested and receive education on complete wellness management. This will prevent driver fatigue and drivers receiving education on their wellness management will experience improved health with a direct outcome of fewer crashes on our roads.

7. CONCLUSION

Durban is a port city and road freight movements will always be a significant part of the transport network. Road freight will continue to have a negative impact on road safety in the city unless city officials collaborate effectively with all stakeholders at each level of the logistic system. The movement of road freight has to be managed with support from the national, provincial and local government authorities. The heavy vehicle safety intervention has started to train and develop officers so that they are better equipped to inspect heavy vehicles while heavy vehicle road safety education has been rolled out to private companies and also council employees. Companies have been encouraged to promote wellness management of their drivers to ensure the well-being of their staff. The RTMS concept will achieve long-term benefits and the municipality has initiated a pilot project with its Durban Solid Waste fleet and the initial outcomes are positive. The training of police officers and the road safety education of drivers is developing momentum and the city will continue to utilize the integrated approach to lessen the heavy vehicle crashes. The benefits of this heavy vehicle safety intervention will be shared with other municipalities.

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