
**CONSULTANCY SERVICES FOR AXLE LOAD MONITORING
(EASTERN PACKAGE)**

CONTRACT NO. KRB/594A/2011-2012

FINAL REPORT

DATE: DECEMBER 2014

LIST OF ACRONYMS

ALC	Axle Load Control
CCTV	Closed Circuit Television
COMESA	Common Market of East and Southern Africa
EAC	East African Community
GVW	Gross Vehicle Weight
HGV	Heavy Goods Vehicle
HSWIM	High Speed Weigh in Motion
HVs	Heavy Vehicles
KeNHA	Kenya National Highways Authority
KeRRA	Kenya Rural Roads Authority
Km	Kilometre
KPA	Kenya Ports Authority
KRA	Kenya Revenue Authority
KRB	Kenya Roads Board
KShs	Kenya Shillings
KURA	Kenya Urban Roads Authority
LCC	Laybye Control Centre
LSWIM	Low Speed Weigh in Motion
No.	Number
OK	Okay
SGS	Societe Generale de Surveillance

EXECUTIVE SUMMARY

EX1: Introduction

Kenya Roads Board (KRB) commissioned KIRI CONSULT Ltd to carry out Consultancy Services for study of Axle Load Monitoring in Kenya (Eastern Package).

Currently the road network is 160,886Km and consists of paved, gravel and earth roads and is one of the largest assets of the country. According to the National Integrated Transport Policy, road transport is the most predominant mode of transport and carries over 93% of all freight and passenger traffic in the country. The Vision 2030 recognises the need *"to deploy and employ cost-effective world class infrastructure facilities and services in support of socio-economic development"*.

Roads are designed to withstand certain traffic loading (equivalent standard axles) over their lifetime and hence the damaging effect to pavement by vehicles depends largely on the axle loads applied by the vehicles plying the route. The damage to road infrastructure caused by overloaded heavy goods vehicles is a great concern to the Government.

In order to protect the road infrastructure assets from premature failure caused by overloading, axle load controls (ALC) in the country have been operational since the 1970s. ALC is currently undertaken by the Kenya National Highways Authority (KeNHA) at the Nine (9) static weighbridge sites (Athi River, Mariakani, Gilgil, Webuye, Rongo, Juja, Busia, Isinya and Mtwapa) and Six (6) mobile weighbridge sites (Thika, Maai-Mahiu, Kisumu, Eldoret, Malaba and Namanga) on the Mombasa-Nairobi-Malaba Road, Mau Summit-Kericho-Kisumu Road and on other International and National Trunk Roads. In addition the Consultant is aware that Kenya Urban Roads Authority (KURA) and Kenya Rural Roads Authority (KeRRA) are also carrying axle load monitoring on their networks using mobile weighbridges. The Traffic Police and Judiciary Departments are also involved in the prosecution of offenders.

In January 2010, KRB engaged a Consultant to independently evaluate the effectiveness of axle load control operations as currently being undertaken by the Kenya National Highways Authority (KeNHA). A key finding from the study was that overloading is still endemic on the road network (over 70% of all vehicles weighed were overloaded on axles while over 30% were overloaded on Gross Vehicle Weight).

The Best Options Study, commissioned by the European Union in 2006 estimated that the damage to road infrastructure due to overloading on the Northern Corridor alone was in excess of KShs700 million per annum. The study made the following key recommendations for enhancement of ALC in the country:

Modernizing and upgrading of existing axle load control facilities and in the long term, establishment of control facilities for full coverage along the main heavy vehicles routes.

Delegation of strategic responsibility for axle load control to a private consultant. Outsourcing the management of weighbridge facilities to private sector management Contractors.

Amendments to the traffic act to inter alia outlaw 4 group axle, increased fines to be commensurate with overloading damage.

These recommendations are at various stages of implementation. The Government is committed to rigorously enforcing ALC in the country and reverse this trend of prevalent overloading in order to protect the road investments. In this regard, KRB intends to intensify axle load control operations/management monitoring and extend the scope to cover urban and rural roads as well as highways.

EX2: Objectives of the Consultancy

The Objectives of the Consultancy are to:-

Independently review the effectiveness of the enforcement of axle load control measures being undertaken by the Roads Authorities and to make recommendations to enhance compliance.

Using collected axle load statistical data to establish historical trends at major trunk roads and critical rural and urban links and recommend a suitable ALC regime.

EX3: Scope of Works

The axle load monitoring covers Eastern part of the country including Nairobi. The Eastern Package covers the former Coast, Eastern, Central, North Eastern and Nairobi provinces including Namanga. The Consultancy also covers the major urban areas of Nairobi and Mombasa including data capture for critical urban and rural links and the recently completed by-pass roads.

The schedule of existing weighbridges stations to be monitored under this package is given below:

PACKAGE	STATIC WEIGHBRIDGES	MOBILE WEIGHBRIDGES
Eastern Package	Mariakani	Thika
	Athi River	Mtwapa
		Namanga
		Juja

The tasks to be undertaken by the Consultant under this package include, but not necessarily limited to the following summary:

- 1) Undertake monthly field visits by one field team to independently weigh all heavy goods vehicles, using mobile weighbridge equipment at 4 No. sites.
- 2) Undertake monthly monitoring visits to existing KeNHA static and mobile weighbridges at 4 No. sites for 24 hours on random days.
- 3) Review, collate and analyze weighing data prepared by road authorities and correlate with independent data collected by the Consultant.
- 4) Assess the Maintenance and calibration status of the weighbridge equipment at the established weighbridge stations.
- 5) Develop software for storage and analysis of weighing data and prepare customized weigh measurement reports.
- 6) Train selected KRB staff to use the axle load database developed by the Consultant.
- 7) The Consultants shall carry out independent ad-hoc visits quarterly.
- 8) Review the current axle load regime and implementation measures currently being undertaken by the Road Authorities to enhance ALC operations during the reporting period in line with the recommendations of "Best Options" Study.
- 9) Prepare and submit monthly progress briefs, quarterly and annual axle load monitoring reports to KRB in both hard and soft copy.
- 10) Prepare and present to a stakeholder's workshop, annual report on axle load monitoring. Two workshops shall be held during project the duration.

EX4: Commencement of Services and Period under Review

The date of Contract effectiveness was 9th August 2012, while the date of commencement was 10th September 2012. The Contact duration is 27 months. This Final Report summarizes the activities, observations, findings and recommendations made by the Consultant during the Nine (9) Quarters in the Contract i.e. **Quarter 1, Quarter 2, Quarter 3, Quarter 4, Quarter 5, Quarter 6, Quarter 7, Quarter 8** and the **Final Quarter**. The period is from September 2012 upto the end of November 2014 in accordance with the Terms of Reference.

EX5: Rationale for Axle Load Control

As heavy vehicles pass over a road, they cause deflection, stress and strain to the road pavement. Parts of these effects are permanent and cumulative. The accumulated deflection, stress and strain eventually result in rutting, cracking and deformation of the pavement.

The following benefits can accrue from axle load control:

- Control of the “consumption” of the road pavement in a balanced and cost effective manner;
- Provision of a safe framework within which the vehicles concerned may operate and the road pavements can be protected in accordance with the design standards used for the road and the vehicle;
- Efficient operation of the road transport system;
- Provision of an equitable framework within which transport operators can compete in a free market environment;
- Reduction in road hazard imposed by overloaded vehicles; and
- Reduced congestion and inconvenience to public caused by road repairs necessitated by overloading.

Ultimately, the rationale behind axle load control is to ensure that legal loads, set at a level that minimizes total transport costs to the national economy, are observed. Violation of these limits by overloading and associated premature distress of road infrastructure can be very costly to the national economy. Consequently, there is a very strong technical and economic rationale for controlling axle loads on the Kenya road network.

EX6: Key Findings and Recommendations

Key Findings on implementation of Best Options Study Report Recommendations

Upgrade of Facilities

Installation of a weighbridge facility at the Port of Mombasa is not in KeNHA’s immediate plans

The upgrade of facilities and construction of a traffic control centre at Ruiru does not fall under KeNHA’s immediate plans

Consultancy Services Contract for Design and Construction Supervision for Improvement of Mariakani and Athi River Weighbridges was awarded to CAS Consultants Ltd. The Contract Period is 10 months and was signed in **June 2013**.

The Consultant completed the designs and the tender for construction was advertised in **August 2014** awaiting evaluation and award processes.

Amendments to the Traffic Act

All recommended amendments to the Traffic Act have been achieved and implemented through Legal Notice No. 118 of 12th September 2008.

New Legal Axle Weights Limits were gazetted and effected through Legal Notice No.93 on 14th June, 2013.

The East Africa Vehicle Load Control Bill envisages decriminalization and charging of overloading fees administratively with the extent of damage (Overload x Distance). This was passed in the East African Legislative Assembly on the 27th May 2013 and now awaiting ratification from the various heads of state.

Enforcement of Axle Load Control Legislation

Regular calibration of the equipment being mandatory on a quarterly basis.

Computerized systems been implemented in all weighbridges (Mariakani, Athi River, Isinya, Mtwapa and Juja. These stations have not been networked.

Facilities Management

- All weighbridges have been privatised and are managed by SGS.

Operational Specifications of the Best Option

All weighbridges operate on a 24 hour basis.

KURA and KeRRA undertake monthly monitoring country wide though not on a consistent basis.

Continuous Traffic Monitoring

Continuous classified directional traffic counts are now being undertaken at Mariakani and Athi River since January 2014.

Data Loggers, HSWIM Scales with automatic number plate readers in Mariakani and Athi River have been operational since January 2014.

Data Loggers and HSWIM Scales are yet to be installed at Ruiru, Mtwapa, Voi, Thika – Garissa Road, Machakos Access Road, Thika – Nyeri Road, Thika – Embu Road and Nairobi – Magadi Road.

Key Findings on KeNHA Weighbridges Equipment, Facilities, Personnel and Management

All weighbridges have been privatized and are managed by SGS.

All weighbridges are computerized.

All weighbridge equipment in use were calibrated and in good working condition.

With the exception of Mariakani, Isinya and Juja, the other stations have poor approaches and exits.

With the exception of Mariakani and Athi River, the other stations have no parking spaces.

All weighbridges are installed with CCTV cameras.

Athi River and Mariakani weighbridges are installed with HSWIM Scales and Data Loggers.

Key Findings on KeNHA Weighbridges Monitoring Data Analysis Results

- There was a gradual reduction in the average overloading per axle during the two year period from a figure of **42.40%** in **Quarter 1** to a low of **26.83%** in **Quarter 8**.
- The average GVW overloading during the two year period had a marginal decrease with **Quarter 1** recording the highest figure of **7.40%** and **Quarter 6** recording the lowest figure of **0.59%**.
- The average percentage of undiverted traffic during the two year period decreased from **30.30%** in **Quarter 1** to **24.93%** in **Quarter 5** thereafter it increased to **28.59%** in **Quarter 8**.
- The highest axle overloading of **95.17%** was recorded in the month of February 2013 at Mariakani Weighbridge while the highest GVW overloading of **36.00%** was recorded in the month of December 2012 also at Mariakani Weighbridge.
- The highest recorded overloading in the KeNHA Weighbridges reduced during the two year period. In overall, Mariakani was the Weighbridge with the highest overloaded HGV.
- Axle type **6C**, **6G** and **3A** are more commonly overloaded. Overall axle type **6C** is the highest overloaded configuration all occurring along Nairobi- Mombasa Road (A109). Axle type **6C** recorded the maximum axle overload of **83.78%** in **Quarter 4** at **Mtwapa** Weighbridge in the month of **September 2013**. This was followed by axle type **6G** with a figure of **69.46%** in **Quarter 7** at **Mariakani** Weighbridge in the month of **June 2014**. Axle type **3A** recorded a high of **63.34%** in **Quarter 7** at **Juja** Weighbridge in the month of **April 2014**.
- **Nairobi, Mombasa, Kilifi** and **Thika** are the top local destinations with highest overloaded HGV. **Uganda** was the top International destination with high overloading. Nairobi recorded the highest percentage of 83.81% in Quarter 4 while Uganda recorded a high figure of 45.02% in the same Quarter 4.
- **Blocks, Containers, Sand** and **Clinker** are the most overloaded cargo. Each recorded highest values of 68.00% (Juja-February 2013), 64.89% (Athi River-April 2013), 50.00% (Mtwapa-April 2013) and 45.60% (Mtwapa-December 2012) respectively.
- **MOTREX, BUZEKI** and **MULTIPLE** are the top overloading transporters. Each recorded highest values of 36.42% (Mariakani-August 2013), 28.57% (Juja-May 2013) and 23.49% (Mariakani-August 2013) respectively.
- Queuing Time was not recorded at the Weighbridges during **Quarter 1, Quarter 2, Quarter 3** and **Quarter 4**. There was a gradual increase in the recorded Queuing Time during the year with **Quarter 5** recording the lowest average

figure of **10.92 Minutes** and **Quarter 8** recording the highest average figure of **16.50 Minutes**. The highest Queuing Time was recorded at **Mariakani Weighbridge (34 Minutes)** in the month of September 2014 during Quarter 8. Quarter 8 recorded the highest average Queuing Time of 18.50 Minutes in the month of September 2014.

Key Findings on Independent Weighing Data Analysis Results

There was a reduction in overloading during the two year period with **Quarter 3** recording the highest figures of **64.39%** Axle Overload and **26.83%** GVW Overload while the lowest figures were recorded in the **Final Quarter** as **34.76%** Axle Overload and **6.06%** GVW Overload.

The highest axle overloading of **90.77%** was recorded in **MAKANDE** Station (Mombasa) in the month of September 2013 (Quarter 4) while the highest GVW overloading of **60.90%** was recorded in **UKUNDA** Station along Road A14 in the month of December 2012 (Quarter 1).

Higher figures of overloading were encountered along Link Roads where there were minimal or no ALC as in the case of **UTAWALA** (Eastern By-Pass Nairobi), **NAIROBI Likoni Road**, **KUTUS** (Kerugoya), **MATUU** (Thika-Garissa Road A3), **MWINGI** (Thika-Garissa Road A3) and **LUMUMBA** Road in Mombasa which recorded high axle overload figures of **75.00%**, **76.49%**, **70.97%**, **65.36%**, **78.13%** and **42.33%** respectively.

Axle configuration type **2A**, **6C**, **3A** and **6G** are the most overloaded. Axle type 2A recorded the highest figure of **97.22%** (**NKUBU**) during Quarter 3 in the month of May 2013; 6C recorded a high figure of **90.00%** (**MAKINDU**) during Quarter 2, March 2013; 3A recorded a high of **60.00%** (**RUAKA**) in Quarter 2, March 2013; and finally 6G recorded a high figure of **46.00%** (**KUTUS**) during Quarter 2 in the month of February 2013. There was significant reduction in overloading in terms of the axle configurations during the two year period.

Mombasa, Nairobi, Thika and **Nyeri** are the top local destinations with highest overloaded HGV. **Uganda** was the top International destination with high overloading. Mombasa recorded the highest percentage of **100%** in Quarter 8 (August 2014) while Uganda recorded a high figure of **69.31%** in Quarter 4 (August 2013).

Containers, Sand, Building Blocks and **Salt** are the most overloaded cargo. Each recorded highest values of **92.73%** (Likoni Road-June 2013), **81.80%** (Kikuyu-December 2012), **70.83%** (Ruaka-September 2014) and **61.10%** (Ukunda-December 2012) respectively. There was a reduction in the percentages of the most overloaded cargo during the two year period which indicates a decrease in overloading.

KAYSALT, MWANGI, MOTREX and GIFCON are the top overloading transporters. Each recorded highest values of 44.40% (Ukunda-December 2012), 35.14% (Matuu-October 2013), 33.33% (Kaloleni-June 2013) and 27.80% (Ukunda-December 2012) respectively. There was a reduction in the percentages of the overloading transporters during the two year period which indicates a reduction in overloading.

Key Findings on Road Authorities Reports Data Analysis

- There was a gradual reduction in axle overloading during the two year period with **Quarter 1** registering the highest figure of **60.84%** and the figure reducing to **12.48%** in the **Final Quarter**. The highest average monthly axle overloading of **68.04%** was recorded in the month of **November 2012**.

Comparison between KeNHA Weighbridges Monitoring, Independent Weighing and Road Authorities Reports

Comparison between KeNHA Weighbridges Monitoring, Independent Weighing and Road Authorities Data Reports indicates a decline in overloading during the two year period. The maximum recorded average axle overload was **64.39%** during Independent Weighing in Quarter 3 while the lowest average axle overload of **8.72%** was recorded under KeNHA Monthly Data Reports in Quarter 4. Similarly, the maximum recorded average GVW Overload of **26.83%** was recorded during Independent Weighing in Quarter 3 and this reduced to a figure of **6.06%** during Independent Weighing in the Final Quarter.

Independent Weighing axle overload percentages remained consistently high all throughout the two year period in comparison with KeNHA Weighbridges Monitoring and KeNHA Monthly Data Reports. This is attributed to the fact that, Independent Weighing covers roads in the entire Eastern region including those that do not have established National Weighbridges. Thus, Independent Weighing incorporates Link Roads which are not covered by KeNHA Weighbridges. Further, this variation could be due to the number of days the data was collected. The Consultant's data for KeNHA Weighbridges Monitoring is for 24 hours while Independent Weighing data is for 48 hours. KeNHA's Monthly Data is collected in a period of 30 days.

KeNHA Weighbridges monitoring data shows the highest average GVW Overload of **7.40%** (Quarter 1) while Independent Weighing data shows the highest average GVW Overload of **26.83%** (Quarter 3). Similarly, KeNHA Weighbridges monitoring data shows the lowest average GVW Overload of **0.59%** (Quarter 6) while Independent Weighing data shows the lowest average GVW Overload of **6.06%** (Final Quarter). This variation is attributed to the fact that Independent Weighing covers not only KeNHA Weighbridges network but also KURA and KeRRA road

networks. This variation could also be as a result of some HGV not showing up at KeNHA Weighbridges during the 24 hour monitoring period which could be an indicator of malpractices at the weighbridges. KeNHA Monthly Data Reports did not have GVW data available for analysis.

Key Findings on Calibration Status of the Equipment

All weighbridge stations had their equipment operational and calibrated.

Key Findings on Court Fines and Overloading Trends

- A total of **KShs 482,896,727** was collected in the Eastern region weighbridges as court fines during the two year period as from **November 2012** to **November 2014**. There was a reduction in Court Fines collected between **Quarter 1** and **Quarter 5** indicating a decrease in overloading during that period. However, the Court Fines collected increased between **Quarter 5** and **Quarter 7** indicating an increase in overloading in that period. Fines collected between **Quarter 7** and **Final Quarter** are relatively the same with small variations and this indicates a marginal decrease in overloading in that period.

Overloading trends indicate that overloading levels per axle have decreased between **Quarter 1** and **Final Quarter**. KeNHA monitoring 24 hour data indicates a decrease in axle overloading levels from **42.40%** in **Quarter 1** to **26.83%** in **Quarter 8**. Independent weighing 48 hour data indicates a decrease in axle overloading levels from **60.50%** in **Quarter 1** to **34.76%** in **Final Quarter**. KeNHA monthly data also indicate a decrease in axle overloading levels from **60.84%** in **Quarter 1** to **12.48%** in the **Final Quarter**.

Key Findings on Current Legal, Institutional and Operational Challenges

- There is need to improve infrastructure especially approaches, exits and parking at Athi River, Isinya, Juja and Mtwapa Weighbridges.
- There is lack of public awareness campaigns.
- Diversion of all HGV traffic to weighbridges is still a major challenge especially in Mariakani and Athi River.
- KURA and KeRRA lack funds to extensively carry out ALC at their roads of jurisdiction.
- There is poor coordination in carrying out ALC in the country and within the region.
- Court processes lead to delayed justice and loss of business revenue due to the long time it takes.
- Lack of clear command structure at weighbridges is a hindrance to efficiency at weighbridges since police report to the traffic commandant while Management Contractor's staff report to KeNHA.

- Malpractices are also a hindrance to effective ALC.
- Top overloading companies have remained the same throughout the monitoring period.
- There are operational challenges to do with specific loads which shift position during transportation e.g. agricultural products which require re-distribution at every weighbridge leading to delays contributing to loss of business revenue.
- There is also operational challenge on the part of Transporters which has to do with loading arrangement and distribution so as not to exceed the axle load legal limits. This in essence leads to re-distribution of loads at the weighbridges which is a time consuming exercise causing delays and loss of business revenue.
- There is the issue of liftable axles with mechanical switches most common in 6G axle configuration where the axles are mechanically dropped down during weighing at the weighbridges and then they are lifted once out of the weighbridges leading to overloaded axles. Truck drivers prefer these axles lifted to improve on traction and speed especially during uphill manoeuvres.
- In Isinya weighbridge, liftable axles are not weighed and the truck drivers are instructed to lift them during weighing at the weighbridge. In Athi River and Mariakani weighbridges, liftable axles are weighed and truck drivers are instructed to drop them down for weighing at the weighbridges.
- In Athi River and Mariakani weighbridges, prosecution as a result of overloaded axles is only based on grouped axles and overloaded single axles are not considered.
- There are operational challenges to do with the *Kenwei Weighing System* Software installed at the weighbridges. Data retrieval is an issue where it was not possible to collect data on Vehicle Make, Cargo, Transporter, Origin and Destination for the specific monitoring days. At Isinya weighbridge, it was not possible to retrieve and collect data covering the specific monitoring days. What could be retrieved was a print out of summarized data in the SGS Contractor's format. This retrieved data was lacking specific details on axle load measurements.

Key Findings on Queuing Time at KeNHA Weighbridges

- Queuing Time was not recorded at the Weighbridges during **Quarter 1, Quarter 2, Quarter 3 and Quarter 4.**
- There was a gradual increase in the recorded Queuing Time during the year with **Quarter 5** recording the lowest average figure of **10.92 Minutes** and **Quarter 8** recording the highest average figure of **16.50 Minutes.**
- The highest Queuing Time was recorded at **Mariakani Weighbridge (34 Minutes)** in the month of September 2014 during Quarter 8.

Quarter 8 recorded the highest average Queuing Time of **18.50 Minutes** in the month of September 2014.

EX7: Summary of Recommendations

Section	Recommendations
<p>1. Facilities & Technology</p>	<p>1.1 A LCC (slow speed weigh-in-motion only) with automatic number plate readers be operated at the port of Mombasa exit without prosecution or impounding powers but with technological capability to send overloaded data to Mariakani Weighbridge with linkage to KeNHA and traffic headquarters. CCTV cameras should be installed at this facility.</p> <p>1.2 A HSWIM (high speed weigh-in-motion) scale with automatic number plate reader to be installed at Emali without prosecution or impounding powers but with technological capability to send overloaded data to Athi River Weighbridge with linkage to KeNHA and traffic headquarters. This facility should be installed with CCTV cameras.</p> <p>1.3 Installation of tracking systems in HGV to monitor their movement and easy identification incase verification is required at any time.</p> <p>1.4 Establishing a Vehicle Overload Management Information System.</p> <p>1.5 Rehabilitation of approaches, exits and parking at Athi River; construction of approaches, exits and parking at Isinya and Mtwapa; construction of parking at Juja</p> <p>1.6 Construction of weigh-in motion multideck weighbridges at Isinya, Mtwapa and Juja</p> <p>1.7 Improvement and expansion of the railway system especially the Mombasa-Nairobi line as this will attract a lot of cargo thereby reducing overloading on roads</p>
<p>2. Overall Management and Coordination</p>	<p>2.1 Formation of Axle Load Steering Committee that will coordinate KeNHA's, KURA's and KeRRA's axle load operations to ensure efficient and coordinated approach in the country and in the region. KURA should intensify its monitoring in Mombasa Town roads due to high overloading cases recorded.</p>
<p>3. Operational Specifications</p>	<p>3.1 The movement, over time to the development and use of a special section of the Kenya Republic Police as a Heavy Vehicle Traffic Police Force under the control of KeNHA, for the</p>

Section	Recommendations
	<p>purpose of axle load enforcement and heavy vehicle safety enforcement.</p> <p>3.2 Procuring of Consultants to audit HSWIM and LSWIM data in comparison with weighbridges data and issue reports that will form the basis of performance indicators to weighbridge Management Contractors. Audit Consultants to work closely with Ethics and Anti-Corruption Commission.</p> <p>3.3 Work with and involve Transporters and Manufacturers so as to ensure that carriages of HGV delivering certain type of goods have compartments complete with load distribution specifications which will not only ensure that loads do not shift during transportation but also achieve loading arrangement and distribution which is within the axle load legal limits which in the long run shall reduce delays at the weighbridges and avoid loss of business revenue.</p> <p>3.4 Issue proper guidelines in all weighbridges on how to deal with the issue of liftable axles. Liftable axles should be fitted with manufacturer’s certified dead man’s switch and must have an automatic drop-down mechanism when loaded as per the Traffic Act (Cap. 403) Legal Notice No.93, 14th June 2013. HGV with defective liftable axles should not be allowed to operate beyond the weighbridges.</p> <p>3.5 In all weighbridges, ensure that prosecution as a result of overloaded axles is not only based on grouped axles but also on overloaded single axles as per the Traffic Act (Cap. 403) Legal Notice No.93, 14th June 2013.</p>
<p>4. Information & Awareness Campaigns</p>	<p>4.1 Create public awareness, sensitization and education of both the transporters, importers and drivers on the benefits of compliance and demerits of overloading. This should be accomplished through pamphlets, billboards, seminars and press conferences. It should also entail publication of information regarding the revised legislation.</p> <p>4.2 Public warning of repetitive offenders through publication in local dailies.</p>
<p>5. The Legal Initiative</p>	<p>5.1 Implementation of the East Africa Vehicle Load Control Act which envisages that;</p> <p><i>5.1.1 Overloading should be decriminalized and overloading charges are to be collected administratively.</i></p>

Section	Recommendations
	<p>5.1.2 <i>Overloading charges should be set based on the principle of recovering road damage cost. Not only routine and periodic maintenance costs but also rehabilitation and reconstruction costs to cover the road damage caused by overloading should be included in the overloading charges.</i></p> <p>5.1.3 <i>All weighbridges on the regional road network to be networked and to be linked electronically to a regional data centre to facilitate sharing of information on overloading control.</i></p> <p>5.2 Amendments to the Traffic Act in line with the following principles:</p> <p>5.2.1 <i>Regulation: introducing fees for absconding and or undiverted HGV that are not weighed at a weighbridge;</i></p> <p>5.2.2 <i>The revenue from fees to be transferred to the administrative body;</i></p> <p>5.2.3 <i>Amendments for cancellation of Licenses for repetitive offenders and issuance of Clearance Certificates by KeNHA to enable issuance of vehicle Licenses.</i></p> <p>5.2.4 <i>Transporters to have weighbridges at loading points as this will greatly reduce axle overloading that at times is due to imbalanced or improper arrangement of cargo.</i></p> <p>5.2.5 <i>Introduction of instant fines at weighbridges.</i></p>
<p>6. Management Contractors Performance Indicators</p>	<p>6.1 Clear and measurable performance indicators to be established as a basis for quantitatively determining the impact of the new measures. The performance targets should ensure the rate of overloading of axles and GVW are reduced to less than 5 percent within 6 months of the Contract.</p>

EX8: Key Challenges and Recommendations

Key Challenges during the Two Years

(1). Failure of the Mobile Weighbridge Equipment

The Consultant was unable to undertake independent weighing due to failure of the mobile weighbridge equipment during the months of July 2013, November 2013, December 2013, January 2014, February 2014, March 2014, April 2014, May 2014 and June 2014. This means that independent weighing was not carried out in part

of Quarter 4, in part of Quarter 5, in Quarter 6 and in Quarter 7 due to failure of the mobile weighbridge equipment. There were gaps in the independent weighing data during the nine (9) quarters and data comparison on overloading trends was therefore affected as detailed in Chapter 6.0 of this Final Report.

(2). Damage of the New Mobile Weighbridge Equipment

There was an incident which occurred during independent weighing along Limuru Road (B3) in the month of July 2014 where the mobile weighbridge equipment was ran over and damaged by a truck which defied the Police order to stop for weighing. The damaged equipment included the chargers, both weighing pad antennae, one of the weighing pad handles, power extension cable and two traffic cones. Challenges arose in repairing the damaged mobile weighbridge equipment which was not insured against such eventuality.

(3). Axle Data Reports from KeNHA, KeRRA and KURA

The Consultant had challenges obtaining axle load data reports from the three road agencies (KeNHA, KURA and KeRRA) especially during Quarter 1, Quarter 2, Quarter 3 and Quarter 4. KeRRA did not undertake any axle load control measurements within the two year period while KURA data was unavailable. All the existing weighbridges are under KeNHA. Reports from Athi River, Mariakani, Juja, Isinya and Mtwapa Weighbridges were received for the various months during the nine (9) quarters. The reports obtained however did not contain data on GVW overloading.

(4). Data Retrieval and Collection at KeNHA Weighbridges

The Consultant was unable to retrieve and collect data on the following during KeNHA weighbridges monitoring for Quarter 6, Quarter 7 and Quarter 8: Vehicle Make, Cargo, Transporter, Origin and Destination. This is due to installation of Kenwei Weighing System which did not give a summarized printout data containing the above parameters. Therefore, analysis of data in terms of top destinations with overloaded HGV, most overloaded cargo and top overloading Transporters was not possible and was not presented for the above Quarters.

(5). Isinya Weighbridge Data Retrieval Challenges

There were challenges in collecting and retrieving data at Isinya Weighbridge. For instance, during Quarter 6, the Consultant could only collect data on total vehicles weighed and those overloaded at Isinya Weighbridge. Exporting data relating to Vehicle Registration Vehicle Make, Cargo, Transporter, Origin and Destination was not possible. During Quarter 8, the Consultant was unable to retrieve and collect data for Isinya weighbridge covering the specific monitoring days. What could be

retrieved was a print out of summarized data in the SGS Contractor's format. This retrieved data was lacking specific details on axle load measurements and therefore the analysis only consisted of estimates.

(6). Capacity of the Mobile Weighbridge Equipment

There were challenges associated with the capacity of the mobile weighbridge equipment in use in terms of the time it took to weigh each HGV. This was particularly experienced along Mombasa Road (A109) where independent weighing process was slow due to the huge number of trucks to be weighed and occasionally this led to traffic jams along Road A109. Heavy duty mobile weighbridge equipment are more preferred in such circumstances.

(7). HGV Use of Alternative Routes to avoid Weighing

Due to the fear of prosecution, certain overloaded vehicles utilized alternative routes to avoid weighing. The drivers of these trucks had the habit of informing each other on the location of the mobile weighbridges. Some postponed their journeys altogether. This challenge was not only experienced during independent weighing but also in the KeNHA Weighbridges especially Athi River Weighbridge where trucks ferrying sand to Nairobi were using alternative routes to avoid the weighbridge altogether.

(8). Prosecution Rights

The final challenge was on lack of prosecution rights during the two years as Consultants who were in charge of Axle Load Control Monitoring in the Eastern Region of Kenya. As part of independent weighing, it was a requirement that the police should escort grossly overloaded HGV to the nearest police station for arrest and prosecution in accordance with the Traffic Act. This however did not take place due to lack of prosecution rights.

Recommendations on Key Challenges

- Procurement of new mobile weighbridge equipment should form part of such Consultancy Contracts for Axle Load Monitoring and should take place at the commencement of such Contracts. Part of the challenges associated with failure of weighbridge equipment was due to hiring of already used equipment which were not reliable.
- Mobile weighbridge equipment should be insured against loss or damage. This is necessary to avoid issues surrounding replacement or repair of the same in case of loss or damage during its usage.
- KeRRA and KURA should be reminded of their mandate in management of the

- roads under their jurisdiction in terms of Axle Load Control. They were not taking the matter seriously. KeNHA on the other hand should ensure that the existing weighbridges report on GVW Overloading which was not taking place.
- Adjustments should be made on the Kenwei Weighing System Software at the KeNHA Weighbridges to ensure that data collection and retrieval is possible for parameters such as Vehicle Make, Cargo, Transporter, Origin and Destination.
 - The problem with data retrieval at Isinya Weighbridge should be sorted out as a matter of urgency. The SGS Weighbridge Manager had promised sometime in mid-2014 that the issue would be resolved but this had not taken place by the end of November 2014.
 - For future similar Consultancy Contracts on Axle Load Control Monitoring, we recommend that heavy duty mobile weighbridges should be utilized on critical Roads e.g. Mombasa Road, A109 to make the process of independent weighing to be more efficient and avoid issues associated with traffic jams arising from the slow pace of weighing.
 - Restrictions should be introduced on alternative routes which can be utilized by HGV avoiding weighing near the KeNHA Weighbridges. For instance, restrictions on tonnage limit can be introduced and gazetted for short sections of these roads on the periphery of the existing weighbridges. This is to ensure that all HGV pass through the weighbridges without fail. HGV who utilize these alternative routes to avoid weighing can then be prosecuted accordingly.
 - For future similar Consultancy Contracts on Axle Load Control Monitoring, we recommend that the Consultants should be furnished with Prosecution Rights so that together with the Traffic Police, grossly overloaded HGV can be escorted to the nearest police station for arrest and prosecution in accordance with the Traffic Act.