

# Economic Growth through Effective Road Asset Management (GEM)

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Civil Design Solutions

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Cover photo: Scenes from the Country Visits

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## Abstract

Technical assistance is being provided to selected rural road agencies in sub-Saharan Africa to foster improvements in performance in road asset management performance. The countries that are participating in the project are Zambia, Uganda, Sierra Leone and the Western Cape region of South Africa. One district has been selected in each country as a focus for the research project. The Uganda National Roads Authority (UNRA) is also participating in the project as an agency responsible for rural roads. Performance in rural road asset management is being monitored against a framework that covers the building blocks towards sustainable road preservation, namely: external/political factors, institutional arrangements, management, financing, technical and operational aspects of the road network. Project activities in the period February to April 2017 included visits by the GEM Advisory Team to all the participating countries and participation in a meeting of AfCAP regional project team leaders in Pretoria. A meeting was held with the sector stakeholders in Lusaka to discuss funding constraints for road maintenance. Data describing the status of asset management in the project areas at end of 2017 has been analysed and compared to the baseline of 2016. This analysis shows that there is progress with addressing shortcomings in road asset management in the project areas, but such progress is being constrained by the failure of central government to allocate adequate funds for road maintenance. There is a need to strengthen policy and practice at the national level for the management of maintenance funds, and to identify new sources of revenue.

## Key words

Rural Roads, Road Preservation, Asset Management, Baseline, Performance Monitoring

## Acknowledgements

The authors would like to acknowledge the significant contribution to the GEM project of the participating roads agencies in Tonkolili, Kamuli, Chongwe, UNRA and the Western Cape.

### Research for Community Access Partnership (ReCAP)

#### Safe and sustainable transport for rural communities

ReCAP is a research programme, funded by UK Aid, with the aim of promoting safe and sustainable transport for rural communities in Africa and Asia. ReCAP comprises the Africa Community Access Partnership (AfCAP) and the Asia Community Access Partnership (AsCAP). These partnerships support knowledge sharing between participating countries in order to enhance the uptake of low cost, proven solutions for rural access that maximise the use of local resources. The ReCAP programme is managed by Cardno Emerging Markets (UK) Ltd.

[www.research4cap.org](http://www.research4cap.org)

## Acronyms, Units and Currencies

\$	United States Dollars
AfCAP	Africa Community Access Partnership
AM	Asset Management
ARMFA	African Road Maintenance Fund Association
ARTReF	African Road and Transport Research Forum
AsCAP	Asia Community Access Partnership
CAV	Current Asset Value
CDS	Civil Design Solutions
CRV	Current Replacement Value
DFID	Department for Further International Development
DM	District Municipality
GAT	GEM Advisory Team
GDP	Gross Domestic Product
GPS	Global positioning system
IAMM	Infrastructure Asset Management Manual
IQL	Information Quality Level
KLG	Kamuli Local Government
LVR	Low Volume Road
MLG	Ministry of Local Government
MOWT	Ministry of Works and Transport
mUSD	Million United States Dollars
NCI	Network Condition Index
NCI <sub>F</sub>	Network Condition Index (Formation)
NCI <sub>P</sub>	Network Condition Index (Pavement)
NFI	Network Functionality Index
NRFA	National Road Fund Administration (Zambia)
PMU	Project Management Unit
PIT	Project Implementation Team
PO-RALG	President's Office – Regional and Local Government
RAI	Rural Access Index
RA	Roads Agency
RAFI	Road Asset Funding Index
RAM	Road Asset Management
RAPI	Road Asset Preservation Index
RCI	Road Condition Index
RCI <sub>F</sub>	Road Condition Index (Formation)
RCI <sub>P</sub>	Road Condition Index (Pavement)
RDA	Road Development Authority (Zambia)
ReCAP	Research for Community Access Partnership
RFI	Road Functionality Index
RMFA	Road Maintenance Fund Administration
RSSG	Road Sector Sustainability Grade
RSSI	Road Sector Sustainability Index
SADC	Southern African Development Community
SC	Steering Committee

SLRA	Sierra Leone Roads Authority
SLRF	Sierra Leone Road Fund
TMH	Technical Methods for Highways
UK	United Kingdom (of Great Britain and Northern Ireland)
UKAid	United Kingdom Aid
UoB	University of Birmingham
UNRA	Uganda National Road Authority
URF	Uganda Road Fund

## Executive summary

Technical assistance is being provided to selected rural road agencies in sub-Saharan Africa to achieve improved road asset management through the monitoring of incremental improvements in management performance. The countries that are participating in the project are Zambia, Uganda, Sierra Leone and the Western Cape region of South Africa. One district has been selected in each country as a focus for the research project. The Uganda National Roads Authority (UNRA) is participating in the project as an agency responsible for rural roads. Performance in rural road asset management is being monitored against a framework that covers the building blocks towards sustainable road preservation, namely: external/political factors, institutional arrangements, management, financing, technical and operational aspects of the road network.

Project activities in the period February to April 2018 included visits by the GEM Advisory Team to all the participating countries as well as participation in a meeting of AfCAP regional project team leaders in Pretoria. A meeting was also held with the sector stakeholders in Lusaka to discuss funding constraints for road maintenance.

Data describing the status of asset management in the project areas at end of 2017 has been analysed and compared to the baseline of 2016. This analysis shows that there is progress with addressing shortcomings in road asset management in the project areas, but such progress is being constrained by the failure of central government to allocate adequate funds for road maintenance.

The establishment of road funds in Uganda, Sierra Leone and Zambia has not resulted in improved funding of rural road maintenance activities. The funds collected under the fuel levy and other revenue sources have been channelled to construction of main and trunk roads leaving the rural feeder roads with inadequate funding. Maintenance on the major trunk and main roads is also not fully funded although it is given priority over rural roads. There is a need to identify other sustainable sources of funding for road maintenance.

## **1 Introduction**

### **1.1 Background**

The Research for Community Access Partnership (ReCAP) is supporting research and capacity building activities in Africa (Africa Community Access Partnership – AfCAP) and Asia (Asia Community Access Partnership – AsCAP). The programme is funded by UK Aid and is managed by Cardno Emerging Markets. Cardno entered into a contract with Civil Design Solutions (CDS) of Mauritius to provide technical support for the delivery of a three-year regional research project on improved management of rural roads.

The project is known as ‘Economic Growth through Effective Road Asset Management – GEM’ and is initially being implemented in sub-Saharan Africa. Sierra Leone, Uganda, Zambia and the Western Cape Province of South Africa are participating in the project. The research process and outcomes are being shared with other ReCAP-participating countries through regional meetings of the Project Implementation Team (PIT) and other dissemination activities. Plans are under consideration to roll out the project approach on a wider scale in Africa and Asia.

The Implementation Phase of the project commenced in July 2016 and is scheduled to end in January 2019.

### **1.2 Purpose of the Project**

The purpose of the project is to achieve economic and social benefits for local communities as a result of improved performance in road asset management. The ultimate beneficiaries of the project are rural communities in sub-Saharan Africa.

### **1.3 Research Objectives**

The objectives of the project are to:

- Review literature and reports on existing and recent road management and maintenance programmes and identify ‘what works’ and ‘what doesn’t work’ in the type of environment likely to be encountered in the project area.
- Develop a framework for measuring performance in road asset management appropriate to rural road networks and apply it in selected project areas.
- Develop simple and appropriate tools for monitoring road condition and apply them in the project areas.
- Develop simple indicators of economic and social impact of rural roads and monitor them in the project areas.
- Achieve incremental (and measurable) improvements to asset management performance in the project areas over a three-year period.

### **1.4 Approach**

The approach to the project is intended to foster self-reliance in road agencies in the project areas and to encourage greater accountability to road users and other sector stakeholders. It provides flexibility and space for the participating road agencies and their stakeholders to determine their own performance in rural road asset management. The approach focuses more on improved performance in road asset management than on any specific or pre-conceived road asset management systems or institutional, management and funding arrangements. Support to this process is being provided through demand-led technical assistance.

### **1.5 Participating Agencies**

The roads agencies that are participating in the project are:

- Tonkolili District of Sierra Leone

- Chongwe Municipality of Zambia
- Kamuli District of Uganda
- The Uganda National Roads Authority
- The Department of Transport and Public Works of the Western Cape (RSA)<sup>1</sup>.

The project representatives of the participating countries are as follows:

#### **Uganda:**

- Uganda National Roads Authority: Dr Mark Henry Rubarenzya and UNRA Research Fellow, Emma Mbabazi
- Kamuli District: Eng Grace Mulondo

#### **Zambia:**

- Road Development Agency: Eng Presley Chilonda and Eng Victor Miti
- Chongwe Municipal Council: Eng Peter Banda

#### **Sierra Leone:**

- Sierra Leone Roads Authority: Eng Tamba Amara and Eng Mahomed Lahayi
- Tonkolili District: Eng Sallieu Konneh

#### **Western Cape:**

- Eng Melanie Hofmeyer.

### **1.6 Advisory Team**

The CDS team that is supporting the implementation of the project is as follows:

- Team Leader: Robert Geddes
- Road Maintenance Expert: Kingstone Gongera
- Road Condition Monitoring Expert: Charles Bopoto
- Rural Transport Economist: Camilla Lema
- Institutional and Financing Expert: Mike Pinard
- Communications Expert: Grace Muhia
- Africa Road Financing Expert: Joseph Haule
- Road Asset Management Expert: Gerrie van Zyl.

The University of Birmingham (UoB) is providing expert support in Road Asset Management to the project under the guidance of Dr Michael Burrow. Two UoB PhD candidates are using the GEM project for their research projects, namely Robert Kakiiza (Uganda) and Peter Kome (Sierra Leone).

### **1.7 Purpose of this Report**

This report presents a summary of activities carried out under the project in the period from February to April 2018 and plans for the next quarter. It includes a report on the status in road asset management in the project areas at end of 2017 relative to the baseline established in 2016.

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<sup>1</sup> The Western Cape participation is self-supporting and is not benefitting from ReCAP support.

## 2 Progress Report

### 2.1 Country Visits

The following country visits were carried out during the reporting period:

- Visit to Zambia for the Socio-Economic and External Communications Component
- Visit of the Road Condition Monitoring Expert to Sierra Leone
- Visit of the Road Condition Monitoring Expert to Uganda and Zambia
- Visit of the Road Maintenance Expert to Zambia.

### 2.2 Meetings and Workshops

The CDS Team Leader attended a meeting of Team Leaders from three AfCAP regional projects in Pretoria on 26<sup>th</sup> and 27<sup>th</sup> February 2018. The outcome of this meeting is recorded in a separate report by ReCAP management.

Members of the GEM Advisory Team attended a meeting in Lusaka to discuss financing of rural roads in Zambia. A summary of the discussions and the outcome of the meeting are included in Chapter 5 of this report.

Two papers have been submitted to the SARF/IFR/PIARC Regional Conference for Africa to be held in Durban in October 2018. The titles of the papers are:

- “Economic Growth through Effective Rural Road Asset Management”. Authors: Robert Geddes, Michael Pinard, Charles Bopoto. Conference Focus Area: FA3 – Preserving Africa’s Roads Assets.
- Reporting

The following reports were submitted during the reporting period.

- The Fourth Quarterly Progress Report.
- February 2018 Monthly Progress Report.
- March 2018 Monthly Progress Report.
- Notes from the Lusaka Meeting on financing of rural roads.

## **3 Follow-up Visit to Zambia for the Socio-Economic and External Communications Component**

### **3.1 Introduction**

The GEM project visit for the socio-economic and external communications components was conducted in Zambia from 27<sup>th</sup> February to 2<sup>nd</sup> March 2018. The team comprised of Camilla Lema (Rural Transport Economist) and Grace Muhia (Communications Expert). Consultative meetings and working sessions were held with the Roads Development Agency (RDA), Chongwe Municipal Council (CMC) and the National Roads Fund Agency (NRFA). A list of people met is included in Annex 1.

### **3.2 Purpose**

The main purpose of the visit was to review progress made in the implementation of the socio-economic component of the GEM project, and to consider the next steps for the GEM communications component following the introductory visit in December 2017.

Specific tasks included:

- a detailed review of the socio-economic repeat survey data and discussion of the preliminary analysis results with the CMC team and RDA representative;
- further review and clarification of the communication tools with the CMC team;
- a field visit to Chilyabale trading centre along the Mwalumina Road, which is earmarked for maintenance;
- a consultative meeting with the NRFA Programming, Monitoring and Evaluation department on M&E issues and maintenance financing of the GEM project roads; and
- identification of the next steps and timing for the implementation of socio-economic and communications components in Chongwe.

### **3.3 Activities**

#### **3.3.1 Meetings with RDA in Lusaka**

An introductory meeting was held with the Principal Engineer in the Directorate of Planning, who is the AfCAP Country Coordinator, to discuss the objectives of the visit and the logistical arrangements for the visit.

A meeting was also held with Ms. Oivy Hamududu, a Sociologist in the Environment and Social Management Unit under the Planning and Design Department. The aim of the meeting was to widen awareness of the GEM project socio-economic and external communication components as well as to enhance knowledge sharing on socio-economic impact assessment of rural roads in Zambia. Issues arising included:

- The role of the unit is to ensure that social issues are incorporated in the planning, design and implementation of road projects in Zambia.
- The RDA uses a 'Compliance Monitoring Guide' as a tool for monitoring social aspects, which must be adhered to by road contractors in the implementation of road projects. The main focus of the guide is on resettlement issues, gender, HIV/AIDS, safety, hygiene, water and sanitation, and child labour.
- Districts and municipal councils are involved in all activities implemented by the RDA at their level.
- Baseline surveys are carried out but there are no benchmarks against which to peg performance of issues being monitored.

- RDA was encouraged to learn from the GEM project and consider the possibility of widening the scope of social monitoring of projects affecting the rural communities to include basic socio-economic indicators.

### 3.3.2 Meeting with the National Roads Fund Agency (NRFA)

A consultative meeting was held with the NRFA Programming, Monitoring and Evaluation department in Lusaka. The aim was to learn how they perform monitoring and evaluation of rural roads maintenance, and to discuss funding issues in relation to the challenges facing the GEM project roads in Chongwe. A summary of issues discussed including the possibility for CMC to request funds specifically for the GEM project roads is attached as Annex 2.

### 3.3.3 Meetings and working sessions with Chongwe Municipal Council

The recent changes at the Chongwe Municipal Council have resulted in the replacement of the Town Clerk and all directors in the CMC. The GEM team was introduced to the new management, including the new Town Clerk (Mr Jovax Ngoma) and the Director of Engineering (Engineer Patrick Mushingi).

A meeting was held with the CMC technical team involving the new Director of Engineering to discuss progress and plans for the GEM project socio-economic and communications components. The RDA and GEM team related key issues arising from the meeting held with the National Roads Fund Agency (NRFA) regarding CMC requests for funds specifically for the GEM project through the Ministry of Local Government (MLG). The CMC team confirmed that they would pursue the issue with MLG and RDA.

Working sessions were held with the CMC team with participation of the RDA representative to review the data from the second round of the socio-economic survey and to discuss the preliminary analysis of the results. The CMC team of four enumerators conducted the survey from 3<sup>rd</sup> to 12<sup>th</sup> October 2017. It was evident that the departure of the former Director of Engineering from the CMC has meant a loss of institutional memory concerning the GEM project. His absence was evident during the review of the survey data as several issues could not be easily clarified by the enumerators. It is expected that the new Director of Engineering will soon become familiar with the project and be able to its various components including the 2018 round of data collection.

Unlike the baseline survey that was conducted in September 2016 was hampered by poor logistic support from the CMC (relying more on secondary data), the repeat survey was better resourced, enabling the survey team to obtain primary data from the field. Nevertheless, the time allocated for the survey was considered inadequate to capture all the necessary information and various aspects in the data remain unclear. The GEM Rural Transport Economist will continue to liaise with the team in Chongwe to clarify and improve the data, and the 2018 survey is expected to show a further improvement.

Initial analysis of the data indicates the following:

- There appear to be no major changes in some socio-economic outcomes despite the lack of maintenance on the project roads, for example the average number of available trips per day has remained constant.
- There are several socio-economic improvements that are unrelated to maintenance and deteriorating road condition, for example transport costs dropped in 2017 due to the reduction in fuel cost in Zambia.
- Prices of goods in the trading centres remained constant, but the maize price dropped by about 25% as a result of the government's decision to reduce the price of maize in the country. It was noted that the seasonal demand and supply of agricultural commodities dictate their prices in the market, in addition to the cost of transport.
- The enrolment of pupils in schools increased due to an emphasis on free basic education by the government. This was irrespective of prevailing poor access conditions in some areas.

These observations confirm the complexity of isolating the effects of poor maintenance on socio-economic conditions in the project area that may be more obviously affected by other factors. This factor is also evident in the GEM research areas in Uganda and Sierra Leone.

### 3.3.4 Maintenance of project roads

Discussions were held at the district on the challenges faced due to inadequate funding of road maintenance. The main issues are summarised below.

- Due to budget constraints, there has been no substantial maintenance work done on the GEM road network of approximately 252km connecting the ten trading centres that are the subject of the socio-economic impact assessment. There are voluntary initiatives by the local communities to remove bottlenecks in some places, but these are rarely recorded by the council.
- A bidding process is underway by the MLG for the rehabilitation of the Mpango (22km), Kanakantapa (20km) and Nchute (40km) roads including some stream crossings. Work is expected to start in May 2018 after the rains. However, the selection of these roads was not based on CMC's initiative, but rather was based on a decision made by MLG linked to the availability of donor funding.
- The budget for maintenance works submitted by the CMC to MLG in 2017 was deferred to the 2018 calendar year. Money from the Constituency Development Fund (CDF) was approved in December 2017 but has not been utilized due to the rains. Each ward will receive K 23,000 (equivalent to US\$ 2,300). The amount will cover about 10km of maintenance (light grading) per ward.
- The total budget for roads maintenance under MLG for 2018 is equivalent to US\$ 130,000 to cater for all 102 districts in the country. MLG decides on the priority roads, and there is political influence in the prioritisation process.
- It is evident that the GEM project (Advisory team, RDA and CMC) should engage actively with the MLG and NRFA in order to understand how maintenance priorities and allocations are to be met, as well as to raise the profile of the GEM project.
- CMC was advised to put on record voluntary interventions by the local communities to address bottlenecks on rural roads and encourage them by providing technical support. This would help to reduce the gap in road maintenance.

From the discussions in the district it was clear that the poor funding situation for maintenance of rural roads in Chongwe makes it difficult to achieve measurable and sustained improvements in socio-economic conditions of the local communities as a result of improved performance in road asset management during the current phase of the GEM project. The funding issue was discussed with the Road Fund and RDA at the meeting in Lusaka on 28<sup>th</sup> May and further steps were agreed to address it (see Chapter 5).

### 3.4 Next steps (Socio-economic component)

The following are the next steps identified for the socio-economic component:

- There is a need to streamline the indicators for the socio-economic impact assessment or the 2018 survey to focus on those that provide the most reliable data linking rural transport and road condition.
- The timing for 2018 survey will be determined by the team in Chongwe when the new Director of Engineering is settled in his office and better acquainted with the project.
- The survey teams will be encouraged to collect anecdotal evidence from the communities on the importance of reliable road access to supplement the quantitative data being collected through the questionnaire. This will be done through informal interviews with local residents.

## 4 External Communications Component

### 4.1 Purpose and Objectives

The purpose of the External Communications component is to investigate and demonstrate how different media outlets and platforms can be deployed to increase awareness at different stakeholder levels to influence the perceptions related to the importance of rural roads. At decision maker level this is expected to lead to increased policy support and funding for the construction, upgrading and maintenance of rural roads. At the community level, the communication and outreach activities are intended to create awareness, promote a buy-in and embed an understanding of how the rural roads are having an impact on the communities.

The External Communications component is closely linked to the socio-economic studies being carried out in the participating countries. The intention is that the participating roads agencies will package the findings of the socio-economic study in a way that they can be brought to the attention of key stakeholders at the local and national levels and be clearly understood by them.

It is expected that a range of media will be used including traditional print media, radio and television, as well as social media platforms. All media outlets used need to be agreed with the ReCAP PMU. In addition, any communications at district level will first be cleared with the relevant official in the district and coordinated with the relevant community liaison officers. All communications, including those at district level, must be cleared with the Zambia Road Development Agency (RDA) Communications Department prior to release to any media platform.

The External Communications component is being implemented in Chongwe District of Zambia as a pilot for one year.

### 4.2 The Role of the Road Development Agency

The Road Development Agency (RDA) is mandated to construct and maintain all public roads in Zambia in accordance with the Public Roads Act (No. 12 of 2002). The RDA recognizes the importance of communications as a tool to enhance relationships with stakeholders and has developed a comprehensive communications policy<sup>2</sup>. Key aspects of the policy are summarised in Annex 3.

The RDA recognises that the communications policy requires more effective implementation. The public is generally aware of RDA projects through radio programmes, hand bills, newspaper articles, etc., but more could be done to explain the importance of roads to the national economy. The RDA provides information to the public through its website, but this medium is not effective in rural areas.

The RDA communications policy provides a framework for communications under the GEM project, but the GEM project is initially focussing more on communications at the district level.

### 4.3 Chongwe District

The communication department in Chongwe District was formed in mid-2017. To date it has not received significant support from the Council and is still developing its communications strategy and starting to implement its communications activities.

An outline communications strategy for the district is included in Table 1.

### 4.4 Findings and Recommendations

It is evident that the public in Zambia is not adequately aware of the role of the municipality and the RDA in the provision and management of roads. Media campaigns are therefore important to help with raising this awareness and educating the public.

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<sup>2</sup> Chibale J, 2016. Communication Policy. Road Development Agency. Lusaka, Zambia.

Communication helps an organization focus on proactive measures instead of reactive measures in crisis situations. Both RDA and CMC have had a history of firefighting when it comes to bad publicity in the past.

The scale and type of communications activities that can be implemented under the GEM initiative will be determined by budget constraints. Senior management in both the RDA and the municipality require continued sensitisation on the importance of the communication department in order to provide more support to the communication activities.

At present none of the communications activities are focused specifically on policy makers. The GEM advisers will continue to emphasise to both the RDA and the CMC the need to include policy makers as a target audience and create a channel through which they can communicate with them. This communication should start with district level decision makers.

**Table 1: Draft Communications Strategy for Chongwe District**

<b>Tool</b>	<b>Description</b>	<b>Relevance</b>	<b>Target audience</b>	<b>Challenges</b>
Community Radio Station	<p>This has proven to be one of the most effective ways of communication in Chongwe. With programmes in English and the local language, people tune in to the local radio station as a medium to be informed, educated and entertained.</p> <p>The programmes broadcast on the community radio station are cross cutting on issues that interest the people of Chongwe.</p>	<p>It covers the radius of the entire Chongwe district including interior areas.</p> <p>It is the cheapest and the easiest way of providing information, especially to those who live remote areas.</p> <p>With the use of the local language, it is easy to get to the people.</p> <p>Feedback is instant especially on live call-in programmes.</p>	<p>Senior citizens</p> <p>Subsistence farmers</p> <p>Business owners</p> <p>People in remote areas.</p>	<p>Not everyone owns a radio</p> <p>There are 72 local languages in Zambia. It is difficult to translate in all the local languages hence the most common one is used, Nyanja.</p>
Community meetings	<p>With a rural set up in most areas of the district, the people of Chongwe have maintained community meetings as a way of exchange of ideas as well as solving problems. These communities have put committees in place where community leaders of the areas are also part of the committees.</p>	<p>Reaches out to the intended target audience.</p> <p>It has high impact as people respect the leadership.</p> <p>It facilitates instant feedback.</p>	<p>Village headmen.</p> <p>People in all parts of the district including remote areas.</p>	<p>One sided participation. Officials from the municipality tend to take charge of the meeting. With little participation from the community.</p>
Television	<p>This is the most effective way of transmitting information since it uses both audio and visual means of conveying information. However, TV is not effective in the remote parts of the district as people may not have TV sets or electricity, and some areas may not have TV reception. In the urban areas of the district most households have a TV set.</p>	<p>Feedback may be instant through text messages, phone calls, tweets and WhatsApp messages responding to the issues discussed.</p> <p>With audio and visual transmission, the information is easily understood.</p> <p>It is a fast means of disseminating information.</p>	<p>Senior citizen</p> <p>Subsistence farmers</p> <p>Business owners</p>	<p>Not accessible to people in areas without electricity or TV reception.</p> <p>Not all households have managed to migrate to digital transmission due to the high cost involved.</p>

Newsletter	The local authority is in the process of establishing a quarterly newsletter as one of the many other tools of communication. The essence of this tool is to establish permanent information since it will be in print form.	It goes to the intended audience. The information is permanent.	People in corporate world. Ministers. Policy makers.	Collecting information for the newsletter, writing articles, layout, publishing and printing costs.
Social Media	Said to be the most powerful medium of communication in the modern era, social media is the most widely used media especially among young people. With tools such as WhatsApp, Facebook, Twitter, Instagram, the communication options have changed to previously unimaginable levels.	Feedback is instant. It facilitates for interactions among end users. It uses both visual and audio which makes understanding easy. Information can be accessed at anytime and anywhere (if the recipient of the information has an internet connection and a smart phone). It reaches out to many people at a one particular moment.	The youth. Business owners. Government employees and others in permanent employment.	Internet is not accessible in most parts of Chongwe. Those who have access to smart phones may experience network failure. The community in Chongwe views social media as intrusive hence they are very resistant to using it.
Public Service Announcements at community meetings	Proven to be an efficient way of disseminating information especially among members of the community, Public Service Announcements have been used in Chongwe by various organisations.	The use of the local language makes it easy for people who cannot understand English get the message.	Community leaders. People in remote areas.	Transport and per diems for field teams undertaking outreach activities.
Literature	Posters are tools under literature and are widely used in Chongwe District. Posters are easily stuck on billboards and tree trunks.	Reaches out to many people as the information is readily available.	Business owners. Community leaders.	Collecting information for the posters, layout, publishing and printing costs.

## 4.5 Next Steps

The next step in the GEM project support to communications at the district level is to assist with the implementation of communications activities. The RDA and the CMC have identified Community Public Meetings, a Sensitization Programme and a Radio Programme as priority activities that could be implemented and have prepared the budget in Table 2. The funding for the media campaign activities will come either from RDA or Municipal Council. This is still under discussion.

If the initial communications activities are successful it is expected that the council and RDA will be supportive of additional and more innovative communications activities.

**Table 2: Media Campaign Budget for GEM Project**

<b>SUMMARY</b>						
Programme Activity Detail F4a						
Appendix ii Activity Costing Form						
Project				Economic Growth Through Effective Road Asset Management GEM		
Department:				Chongwe Municipal Council & RDA		
Unit:				Public Relations		
Programme Name				GEM project Communications Programme		
Activity Name:						
Province:				Lusaka		
District				Chongwe		
Constituency						
<b>Inputs</b>						
<b>Code</b>	<b>Description</b>					<b>Total</b>
1	Community Public Meetings					12,600.00
2	Sensitization Programme					7,800.00
3	Radio Programme					1,000.00
	<b>Grand Total</b>					<b>ZMW 21,400.00</b>
						<b>\$ 2,140.00</b>

## 5 Maintenance Funding for Rural Roads

### 5.1 Meeting at RDA in Lusaka

#### 5.1.1 Purpose

A meeting was held at the Road Development Agency Boardroom, Lusaka on 28<sup>th</sup> March 2018 to discuss all relevant aspects of financing of roads in Zambia, with a particular emphasis on the funding of maintenance of rural roads. The purpose of the meeting was to assist ReCAP management and their consultants to understand existing mechanisms for funding maintenance in Zambia and the constraints faced, and to initiate a process for resolving the constraints through ReCAP support and the GEM project. Tanzania experience was discussed in the meeting as an example of good practice in road fund management. The need for the meeting arose following the lack of maintenance on the GEM network in Chongwe in 2017.

#### 5.1.2 Programme

The programme for the meeting is summarised in Table 3. The list of participants is in Annex 4.

**Table 3: Lusaka Meeting Programme**

Time	Topic	Responsibility
09:00 – 09:15	Welcome address	RDA Director Planning & Design (AfCAP National Coordinator)
09:15 – 09:20	Introduction of participants	GEM Team Leader
09:20 – 09:40	Introduction to the GEM project	GEM Team Leader
09:40 – 10:00	The Road Preservation Pyramid	GEM Institutional and Financing Adviser
10:00 – 10:20	Road Condition Monitoring and Asset Valuation	GEM Road Condition Monitoring Expert
10:20 – 10:40	Tanzania Experience in Funding Rural Roads	GEM Africa Road Financing Expert
10:40 - 11:00	Tea/Coffee	
11:00 – 11:20	State funding of district infrastructure in Zambia	Ministry of Local Government
11:20 – 11:40	NRFA Funding for Rural Roads – Policy, Procedures and Constraints.	NRFA
11:40 – 12:20	Expanding the Road Fund Revenue Base – facilitated discussion	GEM Institutional and Financing Adviser
12:20 - 12:30	Wrap-up of Discussions and Way Forward	GEM Team Leader

#### 5.1.3 Key Issues Arising

1. Zambia was the first country in Africa to establish a Road Fund as part of the RMI initiative in the 1990s. However, it remains a first-generation road fund, whereas other countries such as Tanzania have moved on to second generation road funds which include ring-fencing of funds from the fuel levy. The Tanzania Road Fund has succeeded due to good governance and clear government policies.
2. The Tanzania Road Fund has set conditions upon which funds can be disbursed to rural roads agencies. For example, the agencies must conduct regular condition surveys and prepare the

annual work plan using the DROMAS asset management system. The Zambia NRFA is not operating with a similar clear set of rules.

3. Decisions on the financing of roads in Zambia are still influenced mainly by political priorities, whereas in Tanzania the Road Fund Act makes provision for the share of the Road Fund that must go to rural roads based on consultations with stakeholders, and what proportion of the Road Fund is 'ring-fenced' for maintenance.
4. In Zambia the RDA Act, NRFA Act and Local Government Act are not properly aligned. As a result, there is lack of clarity on who is responsible for planning and prioritisation of rural roads. According to the RDA Act all of the roads in Zambia fall under the RDA and local Councils have delegated authority over the roads. However, this deprives the Councils of the right to be direct recipients of funding from the Road Fund. The Zambia National Service has also been given responsibility to develop and maintain primary feeder roads but does not receive funding from the Road Fund for this purpose.
5. The NRFA does not have a set calendar for submission and approval of project funding proposals, nor set dates for acquittals and other reporting. In addition, no guidelines are issued by NRFA for the preparation of proposals or the required format.
6. There is currently a process underway for revising the NRFA Act.
7. In Tanzania the fuel levy is collected by the Ministry of Finance and is transferred automatically to a dedicated Road Fund account, i.e. it is ring-fenced. In Zambia the NRFA does not have direct control over the Road Fund and must request transfers from the Reserve Bank.
8. In Tanzania the local authorities use revenue from local taxes to finance road maintenance works as a means of expanding their revenue base. This does not happen in Zambia.
9. The Ministry of Local Government (MLG) in Zambia receives proposals for maintenance works from the local authorities. Resources are never sufficient to cover all needs so the LAs are expected to prioritise the works they have requested. The MLG cuts the LA submissions to fit within the budget. There is no policy on the split between road rehabilitation and road maintenance works. The MLG has difficulty in assessing proposals from the LAs because the MLG does not hold baseline data on the condition of the rural roads network. (The MLG is planning to conduct a condition survey of the rural road network under a World Bank project).
10. The planning and implementation of rural road works in Zambia is constrained by weak capacity in the LAs. There is no road management system in place. The proposals for funding are prepared in council meetings and tend to be driven by political priorities. The local economy does not always derive maximum benefit from the works.
11. The MLG carries out procurement of works on behalf of the LAs. The works are certified by the LAs which send the payment certificates to the MLG. The MLG forwards the certificates to the NRFA for payment.
12. Control of the technical quality of maintenance works should remain with the road agency but the road fund should conduct random audits to ensure value for money. The Tanzania Road Fund does not tolerate poor quality road maintenance works. Portable materials testing kits have been procured and distributed to the district engineers. Payment vouchers must be accompanied by materials test results.
13. The NRFA reported that it has accrued a huge debt (500 million US dollars) on behalf of the government and RDA. The government embarked on massive road infrastructure investment projects without adequate funding in place. Debts to contractors and other service providers now go back more than six years. Failure to pay contractors has resulted in delays on site, claims for interest and time related charges etc., thus adding to the debt. Clearing the debt

is a priority for the NRFA but revenue is limited. Tolling of trunk roads throughout the country is helping to increase revenue, and debts to Chinese contractors are being converted into loans.

14. Increasing the fuel levy in Zambia would not be popular with the public, but the public has become accustomed to paying tolls. The public is more likely to accept these charges if the condition of the roads improves.
15. Development funds (for government-funded projects) and maintenance funds are not treated separately by the NRFA. Maintenance funding has been cut to finance the deficit on the development projects.
16. The NRFA is not allowed to operate an account with a commercial bank. It relies on the Reserve Bank to disburse funds but has no control over the timing of these disbursements. The NRFA has a MOU with the roads agencies, but without direct control of the funding it is difficult to operationalise the MOUs.
17. Zambia is planning to use the OPRC form of contract for a large World Bank funded rural roads improvement and maintenance project. It was noted that the Tanzania experience with OPRC showed the approach to be expensive where a rehabilitation component is included. OPRC is now only being used in Tanzania for maintenance of roads already in good condition. OPRC for unpaved roads is particularly problematic due to the rapidly changing conditions of such roads in relation to weather conditions.
18. Tanzania is promoting local contractors, women contractors and labour-based approaches by prescribing a proportion of the road fund to go to these groups. Tanzania has eliminated force account but accepts that it may have some merits.
19. Tanzania uses long term framework contracts for maintenance that have proved useful in managing road maintenance during emergencies.
20. The Tanzania Road Fund provides a budget for research carried out by the Tanzania Rural and Urban Roads Agency (TARURA), which should be emulated by Zambia and other countries.
21. The roads agencies can influence policy at local and national level by demonstrating the impact on road users and communities of insufficient funding for maintenance. Tanzania holds an annual stakeholders' meeting where decision makers (mayors, councillors, other political leaders) are invited. Challenges facing the road sector and the way forward are discussed. The meeting is financed by the Road Fund.
22. Stronger consideration should be given to ensure that appropriate policies are in place that commit to maintenance, for example, by ensuring that any road project automatically has funding components for both construction and maintenance.

#### 5.1.4 Summary of Meeting Outcome

1. The meeting was valuable in assisting the ReCAP team to understand the situation prevailing in Zambia towards financing of road maintenance.
2. The Road Fund is deep in debt and there is no easy way out. Meanwhile, there is considerable scope for improvement to the legislation governing the sector agencies and the rules for operation of the Road Fund in order to protect funds earmarked for maintenance.
3. The increasing backlog of maintenance can lead to a "maintenance time bomb" whereby the increasing maintenance requirements are becoming more and more untenable.
4. Government policies in the roads sector should commit to sustainable funding of road maintenance.
5. A network management system is needed for rural roads. The system must be accessible to the LAs, MLG and the NRFA.

6. Communication systems need to be improved in order for the road sector to engage with policy makers at the highest level on the importance of road maintenance.
7. Innovative schemes need to be introduced to increase the range of revenue sources and the overall magnitude of maintenance funding.
8. ReCAP was invited to write to NRFA with any proposals on what could be done to improve performance in the sector. A detailed “scoping study” will be carried out by ReCAP to identify actions that need to be carried out to address shortcoming in the current system for financing rural roads (see the Draft Terms of Reference below).

## 5.2 Proposed Tasks for Scoping Study

### 5.2.1 Background

Zambia was one of the first countries in Africa to establish a Road Fund as part of the RMI initiative in the 1990s. However, it remains a first-generation road fund, whereas other countries have moved on to second generation road funds which include ring-fencing of funds obtained from the fuel levy and other revenue generating mechanisms such as overloading fines. Reports from the GEM project and the meeting held in Lusaka on 28<sup>th</sup> March 2018 indicate that the Ministry of Local Government has not been allocating money for maintenance to feeder roads in the last 10 years due to limited resources. It is acknowledged that the allocation system is not well structured. Most of the money has been allocated to new construction, upgrading and ongoing works leaving maintenance without resources. The same state of affairs has been experienced with RDA. The NRFA has a policy which stipulates that 60 percent of the funds should be allocated to the maintenance of trunk, main and district roads while 25 percent should be reserved for towns and cities and 15 percent should be for the rural roads. This policy is not being followed and, as a result, new roads are constructed or upgraded but no corresponding funding for maintenance is provided, leading to loss of asset value of the roads due to deterioration in road condition as a result of lack of maintenance. There is a need to determine the root cause of the problems and recommend remedial measures. In particular, the Scoping Study will assess why Zambia has not been able to progress to a second-generation road fund.

### 5.2.2 Tasks to be carried out

The following tasks will be carried out for the Scoping Study:

1. Review governance structures in the road sector including the responsibilities of the Board and the management as laid down in the relevant Act and supporting legislations. Examine the relationship between the Board, the parent ministry (MPWH) and other concerned ministries, and how these relationships impact the functioning of the RDA and Districts.
2. Review policies governing the road sector as they impact the functioning of the road sector institutions.
3. Review procedures for collecting and depositing the revenues assigned to the NRFA. Review procedures that are being followed by the Board when considering the need for raising the level of the road tariff and expanding the revenue base. Assess the budgets and adequacy of the funds in meeting maintenance needs.
4. Assess procedures that are being followed by MPWH in preparing the Annual Road Programme and the manner in which they are being reviewed and evaluated by the Board and other authorities.

5. Assess the type of out-reach programmes which have been adopted by the Board to win public support for more road funding and to assure the public that the revenues from the RMF are producing value-for-money.
6. Assess financial accounting and control procedures that are in place and check whether they conform with acceptable best principles. Check if the systems are capable of tracking revenue, expected disbursements and overall cash balance including the effectiveness of the current disbursement procedures.
7. Since LGAs are entitled to receive money from the NRFA, review how these funds are divided between the various LGAs. Assess any cost-sharing arrangements and the ability to finance the counterpart contributions.
8. Assess the adequacy and the format for regular reports being prepared by the road fund secretariat, including the Annual Report.
9. Identify any additional constraints to ensuring that funds are used efficiently and effectively.
10. Assess the process of how road works are planned, reviewed by the NRB and how payment is made for work financed through the road fund. What procedures are used to ensure that small district councils, with limited technical capacity, are able to prepare acceptable maintenance programmes?
11. Review auditing procedures used for work financed from the road fund.
12. Assess options for expanding the revenue base of the road fund in order to increase road maintenance funding

## 6 Visit of the Road Condition Monitoring Expert to Sierra Leone

### 6.1 Introduction

A follow up visit was made by the Road Condition Monitoring Expert of the GEM Advisory Team to Sierra Leone over the period from the 3<sup>rd</sup> to the 10<sup>th</sup> of February 2018. Details of the itinerary for the visit and the people met are given in Annex 5.

The objectives set for the visit were as follows:

- Review and validate 2017 data on road condition;
- Discuss and re-run the 2017 condition data analysis;
- Re-value road assets as at end of 2017;
- Extend the data collection exercise and analysis to the entire network in Tonkolili;
- Introduce new country team members to the data collection and analysis methods as well the Road Asset Management Assessment; and
- Update the GEM Project country work plans.

### 6.2 Observations and Outcomes of Visit

#### 6.2.1 Role of the District Engineer on Donor Funded Projects

The Road Condition Monitoring Expert initiated discussion with the country team on the functioning and organisational structure of Tonkolili District Council in general as well as the structure and role of the engineering section or department. In addition, the role of the SLRA engineers was discussed. The discussions revealed that the council was being affected by the general elections that were to be held in March 2018; councillors had by then been deactivated.

On the technical aspects it was noted that the District Engineer was involved in supervision of rehabilitation of roads that are funded by donors. The Engineer, however, did not hold any information on the works. The GEM Advisor was informed the interaction between the District Engineers and donor projects was on an ad hoc basis when ideally all contractual, design and quality control data was supposed to be copied to the council.

#### 6.2.2 Review and Validation of 2017 Road Condition Data

An exercise was undertaken with the country technical team to review the 2017 road condition data that had been flagged as possibly inaccurate at the PIT meeting in November 2017. The data was found to be inaccurate and was corrected for further analysis. This involved the staff revisiting their field notes and submissions on road conditions by others in the district office.

#### 6.2.3 Road Condition Data Analysis

Following correction of the data the country team then proceeded to analyse it using the macro designed by the GEM advisers to calculate the Functionality Index, Condition Index – Pavement and Condition Index – Formation<sup>3</sup>. The Road Monitoring Expert explained the analysis method to the new team members, describing how the Deduct System was developed in America and is in use in countries such as South Africa<sup>4</sup>.

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<sup>3</sup> See Chapter 9 for the analysis results dashboard.

<sup>4</sup> TMH9 – Manual for Visual Assessment of Pavements – Part E Unpaved, CDF, May 2016

#### **6.2.4 Structuring of Analysis Tool for Entire Network**

During the previous visit of the Road Monitoring Expert in October 2017 a request was made by the District to modify the Excel spreadsheet to allow updating by users including entering additional road information. The tool was seen as useful in its application to all roads in Tonkolili, not just the GEM designated network. The spreadsheet had subsequently been updated to allow addition of more roads and segments. The country team undertook a preliminary exercise to add more roads with the guidance of the GEM Adviser. The team will continually update the tool from henceforth.

### **6.3 Asset Valuation**

Following analysis of the road condition data, the results were then used to calculate the current asset value of the GEM network as well as the part of the network added. The process of calculating the asset value was again explained in detail. See Chapter 7 for further details and results of the analysis.

#### **6.3.1 Gravel Loss Measurement**

The GEM Adviser and the country team reviewed the method that has been proposed for measuring gravel loss. The adviser explained the method in detail and the country team committed to setting up measurement sites at two locations on each GEM designated road. The paper is included in Annex 6.

#### **6.3.2 Road Asset Management Self-Assessment**

For the benefit of the new team members, the GEM Adviser conducted a review session on the Road Asset Management Self-Assessment Tool/Questionnaire. The presentation of the Road Asset Preservation Pyramid and how it was affected by the various variables generated a significant amount of debate.

#### **6.3.3 Lack of Maintenance Funding**

The meeting noted with concern that there had been no allocation of funds to the District for road maintenance in 2017 and 2018, from either the Road Fund or from Tonkolili Council's own resources. This was having a negative impact on the GEM project in that the country team was gaining invaluable knowledge in maintenance planning and implementation which they could not use in practice. In addition, funds for undertaking condition monitoring and collection of socio-economic data was likely to be severely limited.

It was observed that, in general, districts in Sierra Leone do not have clear guidance from the Road Maintenance Fund on how to apply for funding or prepare acquittal reports for funds received. The Road Fund does not publish its funding calendar that would be followed by road agencies. The meeting searched the Road Fund website and could not discern any technical information that could be used by the agencies. The GEM Advisor shared the experience of Tanzania with the country team by providing reference material of the procedures published by the Tanzania Road Fund Board as well as the DROMAS system that is in use by TARURA.

### **6.4 Updating of GEM Country Action Plans**

In the presence of the GEM Advisor, the country team undertook the updating of the action plan, which had last been updated in September 2017.

The key activity of collection of the 2<sup>nd</sup> round road condition and socio/economic data had been successfully completed.

Notwithstanding the above, it was noted that Tonkolili and the Sierra Leone Roads Authority (SLRA) had not actively implemented some key planned activities and this may have a negative effect on the project outcome. Such activities were:

- Finalising drafting of the Road Asset Management Policy;
- Convening a stakeholder meeting in Freetown to present progress on the GEM Project- such a meeting would include the Road Fund;
- Quantifying total maintenance needs on the network; and
- Requesting training from AfCAP.

The updated action plan is given in Annex 7.

### 6.5 Site Visit

A site visit was made to observe ongoing reconstruction works on one of the GEM designated roads where the country team was observed interacting with the community and checking the quality of the works. In particular, it was noticed that the gravel wearing course was generally not compacted well, especially at the edges of the road. The GEM Advisor provided guidance on the importance of ensuring the gravel was moistened to optimum moisture content and rolled with at least four passes of the ballasted pedestrian roller. A selection of photographs is given in Figure 1.

**Figure 1: Site visit (Tonkolili District)**



### 6.6 Possible Changes to SLRA Feeder Roads Department

The GEM Advisor was informally made aware of changes to the SLRA Feeder Road Department. Eng P. Kome (GEM PhD Student) has been given the task of overseeing the Feeder Roads Department. According to the information made available, there are plans to consolidate all the SLRA Feeder Roads Department's achievements to date and to set up a new structure for the department which

will consist of the following key divisions: Project Management Division (PMD), Network Maintenance Planning Division (NMPD), Research Division (RD) and a Secretariat (SD).

It was indicated that the Research Division could be easily established as there were several ongoing research projects such as those that ReCAP is funding in partnership with the SLRA. A desire was expressed to use the knowledge and expertise gained from the GEM project to start monitoring the scattered network of recently completed, ongoing and potential rural roads projects (associated with donor and government funding). Three new SLRA Engineers were to be assigned the task and the support of the Road Fund had been solicited.

Regarding the proposed Planning Division, the proposal is to ride on the back of the GEM Project in Tonkolili District and to roll out the project to Tonkolili's entire network and to other districts.

## **6.7 Conclusions and Recommendations**

### **6.7.1 Conclusions**

The following conclusions can be made following the visit:

- The lack of funding for routine and periodic maintenance is to a certain extent negatively impacting on the GEM Project; whilst there may be no discernible improvement in road condition, staff participating in the project are not able to fully employ the skills they have gained under the GEM project;
- The Road Fund does not provide adequate guidance to districts on the format of submission of requests or acquittal of expenditure;
- Agency staff have been trained and exposed to good practices. However, they are failing to utilise the skills gained due to lack of maintenance activities;
- Tonkolili District engineers are employed on an ad hoc basis on donor-funded projects, but they are not given access to the full details of the projects; and
- There is great potential for expanding the project to other districts and significant benefits can be expected. The participation of additional districts would introduce the possibility of peer pressure between the districts to improve their road asset management.

### **6.7.2 Recommendations**

It is recommended that greater focus be given to assisting Tonkolili District to effectively quantify and present its needs to the Road Fund. The GEM project must interact with SLRA Head Office, the Road Fund, Ministry of Local Government and any other relevant parties with the objective of understanding the operations of the Road Fund and its linkages with stakeholders. This should include sharing with Sierra Leone the guidelines that will be prepared through the GEM Africa Road Financing Expert's work in Zambia.

Support should be provided to Sierra Leone under the GEM project to train other districts and empower them with skills to monitor recently reconstructed roads.

## **7 Visit of the Road Condition Monitoring Expert to Uganda and Zambia**

### **7.1 Introduction**

The GEM Road Condition Monitoring Expert of the GEM Advisory Team made a visit to UNRA and Kamuli District in Uganda and Chongwe Municipality in Zambia over the period from the 19<sup>th</sup> to 27<sup>th</sup> of March 2018. Details of the itineraries of the visits and the persons met are given in Annex 8.

The objectives set for the visit were as follows:

- Review and validate 2017 data;
- Discuss, re-run 2017 condition data analysis;
- Re-value road assets as at end of 2017;
- Extend the data collection exercise and analysis to the entire network of the district;
- Introduce new country team members on data collection and analysis methods as well Road Asset Management Assessment; and
- Update GEM Project country work plans.

### **7.2 Observations and Outcomes of the Visit**

#### **7.2.1 Review and Validation of 2017 Road Condition Data and Asset Valuation**

An exercise was undertaken with the country technical teams to review the 2017 road condition data that had been flagged as possibly inaccurate. At the end of the discussion the country teams indicated the data that was to be taken as final for the 2017 condition survey exercise. Both road agencies made changes to the rating that had been given to certain roads, which consequently showed an improvement in condition when no maintenance work had been undertaken on the GEM road network. For Kamuli, it was found that some roads had been wrongly classified as earth roads in 2016, when they were actually gravel roads, and vice-versa.

Following correction of the data the country teams proceeded to analyse the data using the macro designed to calculate the Functionality Index, Condition Index – Pavement and Condition Index – Formation. The indices were calculated at segment, road and network levels.

During the previous visit of the Condition Monitoring Expert in 2017 the agency staff requested a modification to the Excel spreadsheet to allow updating by users to enter more road information. The tool was seen as useful in covering all roads in the district, not just the GEM designated network. The spreadsheet had been updated to allow addition of more roads and segments and was handed over to the project engineers.

Following analysis of the road condition data, the results were then used to calculate the current asset value of the GEM networks in each district. The asset value for Kamuli District changed as a result of the corrections that saw some earth roads upgraded to gravel roads. These roads had been incorrectly indicated as earth roads during the 2016 baseline study.

#### **7.2.2 Road Asset Management Self-Assessment**

Each road agency had reviewed the answers previously given in the 2<sup>nd</sup> round of the AM self-assessment process. The GEM Advisor sought further clarifications on areas that were reported as having improved beyond expectations. The field notes were reviewed, and information was received on road conditions from other staff in the district office. Repetitive interaction with Kamuli and

Chongwe personnel eventually yielded AM self-assessment results that were largely representative of the situation pertaining in October 2017, the time of the 2<sup>nd</sup> round of monitoring.

### **7.2.3 Lack of Maintenance Funding**

The interactions in both countries noted with concern that there had been no allocation of funds for maintenance of the GEM road networks in 2017 and 2018, from either the Road Funds or from own resources, for Kamuli District and Chongwe Municipality. This was having a negative impact on the GEM project as it has not been possible to advance with capacity development in the management of road maintenance. UNRA was in a better situation and had a relatively healthy budget for maintenance.

It was also observed, in general, that for both countries, there appears to be no clear guidance from the road maintenance funds on how to apply for funding or prepare acquittal reports for funds received. The road funds do not publish their funding calendar that could be followed by the road agencies. The Scoping Study to be carried out by the GEM Africa Road Financing Expert is expected to assist both Chongwe and Kamuli in accessing more reliable funding for road maintenance.

### **7.2.4 Updating of GEM Country Action Plans**

In the presence of the GEM Advisor, the country teams for Kamuli and UNRA, in Uganda, attended to updating their action plans which had last been updated in 2017.

The key activity of collection of 2<sup>nd</sup> round road condition and socio/economic data had been successfully completed.

Notwithstanding the above, it was noted that the road agencies had not actively implemented many of the key planned activities and this may have a negative effect on the project outcomes. Such activities were:

- Finalising drafting of the Road Asset Management Policies;
- Quantifying total maintenance needs on the network; and
- Requesting training from AfCAP.

The updated action plans are given in Annex 9.

### **7.2.5 Acquisition of Equipment – Kamuli District**

Kamuli District in Uganda recently received new equipment and plant through a programme that is being implemented centrally by the Ministry of Local Government. The equipment consists of a grader, a front-end loader, a 15t vibratory roller, two tipper trucks and one 10,000 litre water bowser. It was noted that the equipment was idle as the district was not able to purchase fuel. Some of the equipment was stored at premises belonging to third parties (the hospital and police station) as the council did not have secure parking areas. Photographs of some of the equipment are shown in Figure 2.



**Figure 2: Newly Acquired Roller and Water Bowser, Kamuli District**

### 7.3 Site Visit

Site visits were made to one project road in each country. In Kamuli District, Uganda, the GEM Adviser accompanied the roads supervisor who was attending to a complaint received from the community about a drainage problem. In Chongwe District, the team visited one of the project roads to verify the condition as well as some socio-economic data that had been collected at one of the rural trading centres. Representative photographs are in Figure 3 and Figure 4.



**Figure 3: Visit to Soko Bar Road, Chongwe Municipality**



**Figure 4: Poor Drainage on Nawatale – Kibuye Road, Kamuli District**

### 7.4 Conclusions and Recommendations

The following conclusions are made following the visit:

- The lack of funding for routine and periodic maintenance is negatively impacting on the GEM Project;

- The shortage of funding is resulting in non-utilisation of new equipment that was recently allocated to Kamuli District in Uganda;
- The Road Funds in both countries do not provide adequate guidance to districts on the format of submission of requests or acquittal of expenditure;
- Greater focus should be given to assisting the project countries to effectively demonstrate and present their needs to the Road Funds;
- The GEM project should increase its interaction with the road funds and ministries of local government in each country to increase the understanding of the operations of the road funds and their linkages to stakeholders;
- Agency staff have been trained and exposed to good practices, however they are failing to utilise skills gained due to lack of maintenance activities; and
- There is great potential for expanding the project to other districts in both Zambia and Uganda, and significant benefits can be expected.

The identification of weak areas in the road asset management performance in the participating countries will enable the GEM advisory team to focus their efforts on resolving the key constraints to achieving the project objectives.

## **8 Visit of the Road Maintenance Expert to Zambia**

### **8.1 Introduction**

The GEM Road Maintenance Expert visited Zambia from 19<sup>th</sup> to 23<sup>rd</sup> March 2018. Meetings were held with Chongwe Municipal Council, RDA and the Ministry of Local Government. The main objective of the visit was to assist the district in making use of the valuable data and information collected so far under the project and use it to make sound management decisions. This included analysis of the asset value trends in the two years of the GEM project and deducing the cost of remedial works based on the data available in the road condition survey reports. The itinerary for the visit and the people met are included in Annex 10.

### **8.2 Meeting with Deputy Director Maintenance MLG**

The Road Maintenance Expert met with the Deputy Director Maintenance in MLG to discuss progress made so far under the GEM project and to highlight some of the problems and challenges that have limited the progress. The Deputy Director was not fully aware of the GEM project.

The issue of funding was discussed, and the Deputy Director expressed his concern regarding the lack of funding. He also indicated that his section had not been fully involved in the project and requested that he be represented during the district visits by engineers from his section. He also requested copies of the reports on the project to update himself on the project and see how he could assist in securing funding for the district.

The Deputy Director mentioned that MLG had not been allocating money for maintenance to feeder roads in the last 10 years due to limited resources and acknowledged that the allocation system was not well structured. Most of the money has been allocated to new construction, upgrading and ongoing works leaving maintenance without resources.

On the part of district councils, the Deputy Director indicated that the submissions coming from the Councils were just a shopping list without adequate information to justify the request. This left them with very little choice but to allocate funds to submissions that were better presented.

The Deputy Director explained the procedure used for allocating funds for road construction and maintenance. The National Road Fund Agency receives funding from central government following the collection of fuel levy and other revenue streams that accrue to Ministry of Finance. The NFRA then gives Ministry of Local Government a portion of the money for road construction and maintenance while RDA also receives its portion. The Ministry of Local Government then has to allocate funds for construction, maintenance, new works and ongoing works for all the major towns and cities. This includes Lusaka and all provincial capitals. After the major cities, the Ministry allocates money to all the 90 district town councils to cover all their construction, maintenance and completion of any ongoing projects carried forward from previous year. After satisfying these needs, then funds for feeder roads are allocated. Due to the limited resources, the feeder roads suffer most as all the money is allocated to the budget items described above.

The policy stipulates that 60 percent of the funds should be allocated to trunk, main and district roads while 25 percent should be reserved for towns and cities and 15 percent should be for the rural roads. This policy is not being followed hence the current situation where new roads are constructed or upgraded but no corresponding funding for maintenance is given.

### **8.3 Meeting with Director Maintenance RDA**

The Road Maintenance Expert met with the Director of Maintenance in RDA and shared the progress registered so far on the GEM Project. He expressed his interest in the project and requested that his engineers be involved in all the visits and proceedings during the GEM project. He explained the lack of adequate funding for maintenance as the major problem.

### **8.4 Visit to Chongwe Municipality.**

#### **8.4.1 Meeting with the Mayor**

The Mayor of Chongwe welcomed the visit and expressed concern at the lack of maintenance of roads in the District. He wanted to know what efforts were being pursued through the project in order to attract funding from government. The Mayor instructed the Chongwe team to work closely with the GEM team in the preparation of requests for funding.

#### **8.4.2 Working session with Director of Works, Chongwe Municipal Council**

The GEM team from Chongwe Municipality had a working session with the Road Maintenance Expert. The main purpose of the session was to assist the team in making use of the information collected through the road condition surveys and the inventory. The team looked at the rate of loss of asset value of the roads since 2016 and the deterioration in condition due to lack of maintenance. A summary of some immediate intervention works to be funded by the Ministry through the road fund was prepared by the team and submitted to the Ministry of Local Government for onward transmission to the Road Fund. The updated GEM Action Plan for Chongwe Municipality is included in Annex 11.

#### **8.4.3 The GEM project and Tractor Demonstration Unit Project**

The GEM project has provided a lot of valuable information to Chongwe Municipal Council. The ongoing AfCAP Tractor Based Road Maintenance project to maintain roads in the district using the intermediate technology is going to assist the Council to realize full benefits of the GEM input in improving management of roads and stimulating economic activities in the district. The tractor pilot project aims to maintain the core road network in Chongwe and this will provide the needed intervention for the district to measure the impact.

### **8.5 Proposed GEM expansion to adjacent districts**

The GEM team has held discussions with two new districts, Chilanga and Lufunsa to start data collection for the road inventory and condition surveys. The Ministry of Local Government is coordinating the involvement of the two districts. The idea is to use the teams in Chongwe to mentor the neighbouring districts as part of building both capacity and confidence in the project. The Research Unit in RDA is supporting this initiative.

## 9 Monitoring of GEM Indicators against 2016 Baseline

### 9.1 Introduction

This chapter presents the status in the project countries as at end of 2017 relative to the baseline established in 2016. Data to establish the status as at end of 2017 were gathered by the project teams in the participating countries between July and October 2017 through the following activities:

- Performance self-assessment by the road agencies guided by the Asset Management Framework developed during the project design phase; and
- Undertaking of a second round of road condition surveys and road asset valuation by the project teams.

The project teams were supported in this process by the GEM Advisory Team.

Following extensive discussions since the commencement of the project, a set of primary indicators has been developed for use in monitoring the outputs, outcomes and impact of the project. This report compares the levels of these indicators as at the baseline in 2016 and as at October 2017. The description of the indicators is given in Table 4.

Section 2 and 3 of this chapter give a summary of the 2017 monitoring data for the project areas for the self-assessment questionnaire and road condition surveys.

Section 4 provides a qualitative analysis of the findings and recommendations for consideration in defining the way forward for the project.

Summaries of the completed and analysed self-assessment questionnaires and road condition data for each of the project areas are included in Annex 12.

**Table 4: GEM Performance Indicators<sup>5</sup>**

Indicator/Index	Acronym	Definition	Notes
Road Condition Index	<b>RCI</b>	Engineering index, a result of aggregation of visually assessed degree and extent of defects at road level. It can be further aggregated to give a Network Condition Index ( <b>NCI</b> ).	Road network to be specified.
Road Functionality Index	<b>RFI</b>	Provides an indication of the level of service offered by a road vis a vis comfort, safety and capacity at road segment level. A result of the aggregation of defects relevant to road functionality combined with the general passability of the road. It can be aggregated to give a Network Functionality Index ( <b>NFI</b> ).	Road network to be specified.
Condition Index (Pavement)	<b>CI<sub>P</sub></b>	Aggregation of degree and extent of defects relevant to the gravel layer only, at road segment level. The <b>CI<sub>P</sub></b> feeds into the Asset Value calculation. It can be aggregated to give a Network Condition Index (Pavement) ( <b>NCI<sub>P</sub></b> ).	Road network to be specified.
Condition Index (Formation)	<b>CI<sub>F</sub></b>	Aggregation of degree and extent of defects relevant to the road formation only, at road segment level. The <b>CI<sub>F</sub></b> feeds into the Asset Value calculation. It can be aggregated to give Network Condition Index (Formation) ( <b>NCI<sub>F</sub></b> ).	Road network to be specified.

<sup>5</sup> These indices are applicable to gravel and earth roads. There are no paved roads on the GEM networks.

Condition Index (Structure)	<b>CI<sub>s</sub></b>	Aggregation of degree and extent of defects of culvert or bridge structure components. The <b>CI<sub>s</sub></b> feeds into the Asset Value calculation. It can be aggregated to give a Network Condition Index (Structures) ( <b>NCI<sub>s</sub></b> ).	Road network to be specified.
Road Sector Sustainability Index	<b>RSSI</b>	The extent to which the necessary policies, funding and institutional capacity are in place to ensure the sustainable provision of roads. Calculated as the weighted aggregation of attainment under the 6 Building Blocks in the Road Preservation Pyramid: External, Institutional, Funding, Managerial, Technical + Operations.	Road agency to be specified. Attainment rated as: 0 - 0.2 = Very poor 0.2 – 0.4 = Poor 0.4 – 0.6 = Fair 0.6 – 0.8 = Good 0.8 – 1 = Very good
Road Asset Preservation Index	<b>RAPI</b>	The ratio of the current road network Current Asset Value ( <b>CAV</b> ) divided by the road network Current Replacement Value ( <b>CRV</b> ).	Road network to be specified.
Road Asset Funding Index	<b>RAFI</b>	Capital funds provided for Asset Renewal (periodic, rehabilitation + reconstruction) divided by Quantified Needs for the same.	Road network to be specified.

Discussion is currently underway within the GEM team on the development of a maintenance funding index to compliment the RAFI.

## 9.2 Performance Self-Assessment

### 9.2.1 Overview

The GEM Self-Assessment questionnaire was used to establish the baseline of performance in each of the five participating agencies in 2016. The process was repeated in October 2017 as a follow-up monitoring exercise. The questionnaire assesses performance across all six building blocks of the road preservation pyramid (external environment, institutional arrangements, finance, management, technical and organisation). The October 2017 monitoring was undertaken by the roads agencies, followed by a verification exercise by the GEM Advisory Team (GAT) in February/March 2018.

The comparison of the baseline and 1st monitoring round assessment scores are presented graphically in the Figure 5 to Figure 9 in sub-sections below and following on. Table 5 to Table 9 provide a summary of areas of AM where the agencies have improved or declined compared to the baseline. Reference must be made to Annex 12 for details of changes/movements in the items reported in Table 5 to Table 9.

## 9.2.2 Chongwe Municipality, Zambia

Figure 5: Summary of Performance Self-Assessment Chongwe Municipality

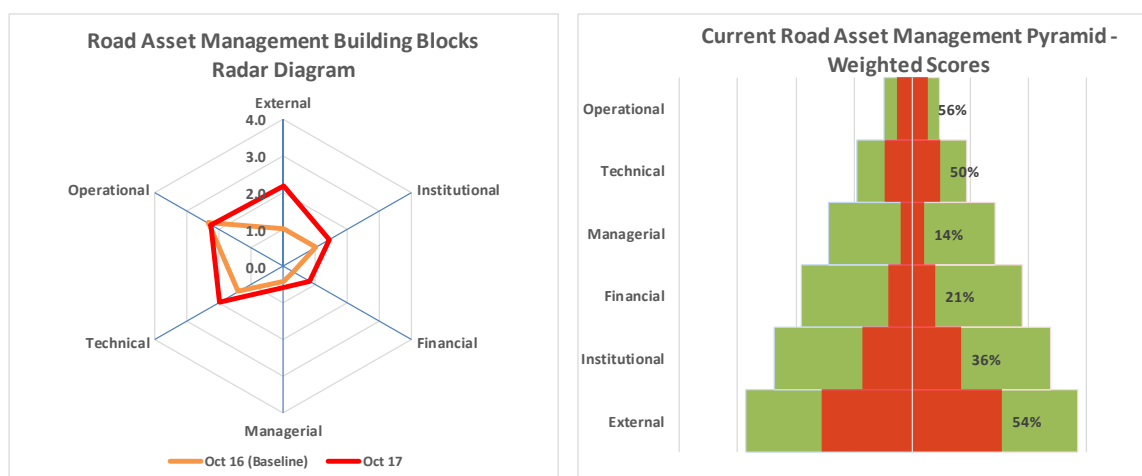


Table 5: Changes in AM Practices – Chongwe Municipality

AM Building Block	AM Aspect	Move	Detail/Justification/Evidence
External/Political	National policy for rural roads	↑	Mis-reported at baseline stage.
	Stakeholder consultation	↑	Use being made of a range of techniques including public notices and community radio.
	Tabling of budgets	↑	Mis-reported at baseline stage.
	Reporting back to stakeholders	↑	Agency now actively participating in provincial forums and communicating with NRF and RDA directly and through local government ministry.
Institutional	Staff roles and responsibilities	↑	Organisational structure defined in enough detail to satisfy AM requirements.
Financial	Provision of road maintenance funding	↑	Agency receives funds from more than one source; mis-reported as baseline.
	Budget funding against perceived need	↑	Budget confirmed as less than 30% of requirements.
	Accounting system	↑	Accounts audited annually.
Managerial	Maintenance plans - methods used	↑	Plans are prepared based on condition though not used in budget allocation.
Technical	Road referencing system - existence	↑	Agency using system introduced under the GEM project.
	Road inventory data	↑	Agency using system introduced under the GEM project.
	Asset utilisation	↑	Agency now assessing bottlenecks on the network.
Operational	Reporting	↑	Weekly reports on activities now being prepared.
	Auditing	↑	Agency requires service suppliers to be ISO certified.

### Commentary:

Chongwe Municipal Council has benefited significantly from the GEM project intervention, but staff changes within the road agency has affected continuity as the council roads division is now headed

by a new director. Lack of funding for maintenance remains the major problem facing Chongwe Municipal Council.

### 9.2.3 Uganda National Roads Authority

Figure 6: Summary of Performance Self-Assessment, UNRA

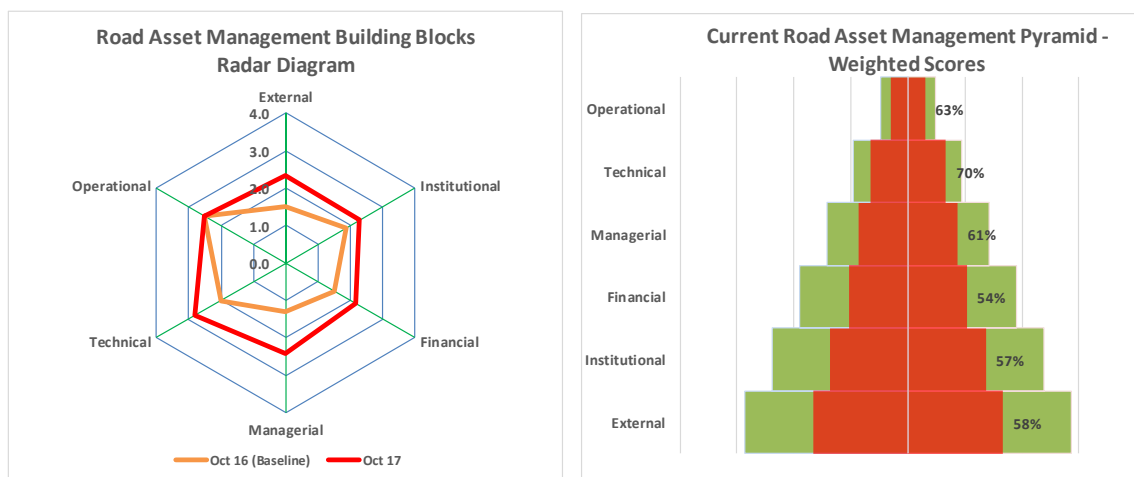


Table 6: Changes in AM Practices – UNRA

AM Building Block	AM Aspect	Move	Detail/Justification/Evidence
External/Political	National policy for rural roads	↑	Policy exists on rural roads and defines stakeholders to be consulted in management of roads.
	Existence of rural road maintenance strategy	↑	Rural roads policy included road maintenance and demands that agencies prepare strategies for sustainable rural road maintenance.
	Stakeholder consultation	↑	
	Tabling of budgets	↑	
	Reporting back to stakeholders	↑	
	Involvement of stakeholders	↑	
Institutional	AM policy development	↑	Policy has been drafted and awaits approval by the Executive and UNRA Board.
	Level of service - existence	↑	UNRA has instituted a system of consulting stakeholders which also relates to setting of levels of service.
	Level of service - use	↑	UNRA network planning division introducing AM system at station level.
	Emergency response plan	↑	Mis-reported at baseline; there is no formal Emergency Response Plan nor debriefing after such events.
	Staff roles and responsibilities	↑	UNRA now able to out-source network condition surveys.
	Staff training and capacity building	↓	Staff training not undertaken in AM for primary staff.

AM Building Block	AM Aspect	Move	Detail/Justification/Evidence
	Staff salaries	↓	Staff salaries now lag behind the private sector.
Financial	Provision of road maintenance funding	↑	Funding received not related to asset condition as previously reported; UNRA also has a single source of funds for maintenance – the Road Fund.
	Budget funding against perceived need	↓	Budget levels fallen to less than 59% of requirements.
	Asset valuation	↑	The agency now carrying out asset valuation and the value is not decreasing.
	Budget funding - asset value	↑	Budget for maintenance is between 0.1% and 0.5% of asset value; item was also under-reported at baseline stage.
	Financial forecasting	↑	Multi-annual plans prepared by network planning division at HQ and are based on current Asset Management Plans.
	Auditing	↑	UNRA financial statements not published annually as reported at baseline.
Managerial	Maintenance intervention levels	↑	Network planning division uses intervention levels directly related to defined levels of service.
	Maintenance plans - methods used	↑	Maintenance and rehabilitation are now prioritised using cost benefit approaches.
	Maintenance backlog	↑	Strategy for reducing backlog maintenance now in place and uses an economic analysis process.
	Traffic forecasting	↑	Traffic forecasts being undertaken based on data collected in last five years.
	Capital expenditure - basis for	↑	Capital projects for next 10 years identified and prioritised taking into account socio-political-economic requirements.
Technical	Road referencing system - existence	↓	Referencing system is not at 200m intervals as reported at baseline.
	Road condition assessment	↑	Assessments are undertaken in accordance with well documented procedures and results are recorded in a computerised AM system.
	Asset utilisation	↑	Agency now measures asset utilisation on all major roads via traffic counts; in addition, bottlenecks are now assessed.
Operational	Maintenance planning	↑	Maintenance planning undertaken on a day to day basis, optimising available resources and taking stakeholder needs into account.
	Reporting	↑	Agency now has guidelines for undertaking internal road audits.

### Commentary

UNRA is managing the national road network as well as part of the sub national road network. This affects performance on the sub national road network due to competing demands from the national

road network. UNRA is well-established in terms of its institutional set up with most of the responsibilities allocated to specific personnel. The agency is still young with personnel having limited experience (between few months to 3 years) within the organization. Funding levels are on a decline and this will have a negative impact on performance. Due to the limited experience within UNRA, supplementary capacity building and training is required to strengthen performance. The fall in salaries compared to the private sector poses potential risk of staff turnover.

### 9.2.4 Kamuli District (Uganda)

Figure 7: Summary of Performance Self-Assessment, Kamuli District

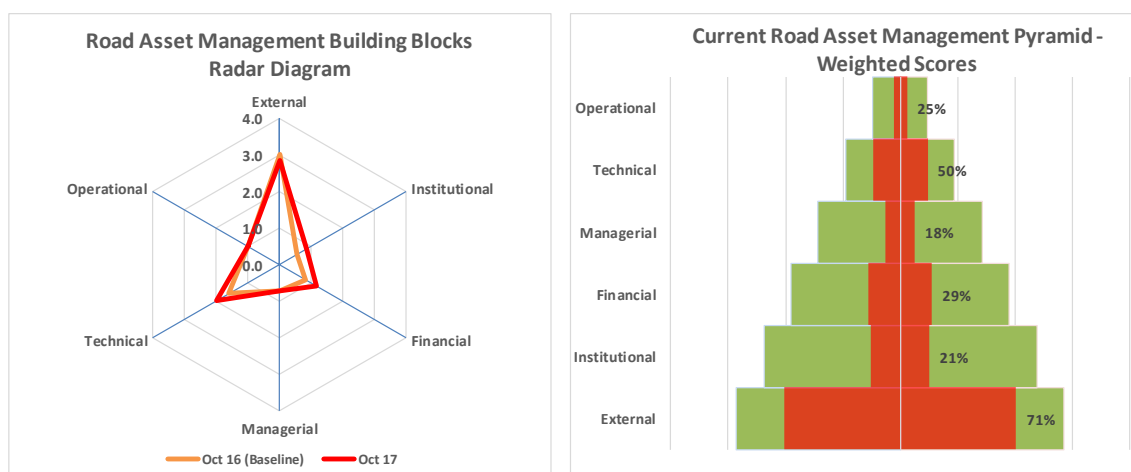


Table 7: Changes in AM Practices – Kamuli District

AM Building Block	AM Aspect	Move	Detail/Justification/Evidence
External/Political	National policy for rural roads	↑	Policy exists on rural roads and defines stakeholders to be consulted in management of roads.
	Existence of rural road maintenance strategy	↑	Rural roads policy includes road maintenance and demands that agencies prepare strategies for sustainable rural road maintenance.
	Tabling of budgets	↑	Budgets tabled in council meetings and approval required before undertaking the works.
	Reporting back to stakeholders	↑	Reports prepared and tabled in council meetings, also displayed publicly for accessing by stakeholders at their convenience.
Institutional	Level of service - existence	↑	District has defined minimum speeds to be achieved on road network.
	Level of service - use	↑	Contribution of network asset value now understood.
Financial	Asset valuation	↑	Asset valuation now being undertaken following guidance given under the GEM project.
	Accounting system	↑	Accounts being audited annually.
Managerial			No changes recorded since the baseline study.
Technical	Road referencing system - existence	↑	Referencing system introduced under the GEM project being used: 5km homogeneous sections.

AM Building Block	AM Aspect	Move	Detail/Justification/Evidence
Operational	Reporting	↑	Reports now being prepared weekly.

### Commentary

Kamuli district institutional set up is has a strong political representation at all levels and this affects the way it is managed. The maintenance operations in the district have been limited due to lack of funding. This makes it difficult to assess the operational and managerial capacity of the road agency. The management tools introduced under the GEM project are being used especially on reporting and data collection. This could be improved if more resources were made available to the agency.

### 9.2.5 Tonkolili District (Sierra Leone)

Figure 8: Summary of Performance Self-Assessment, Tonkolili District

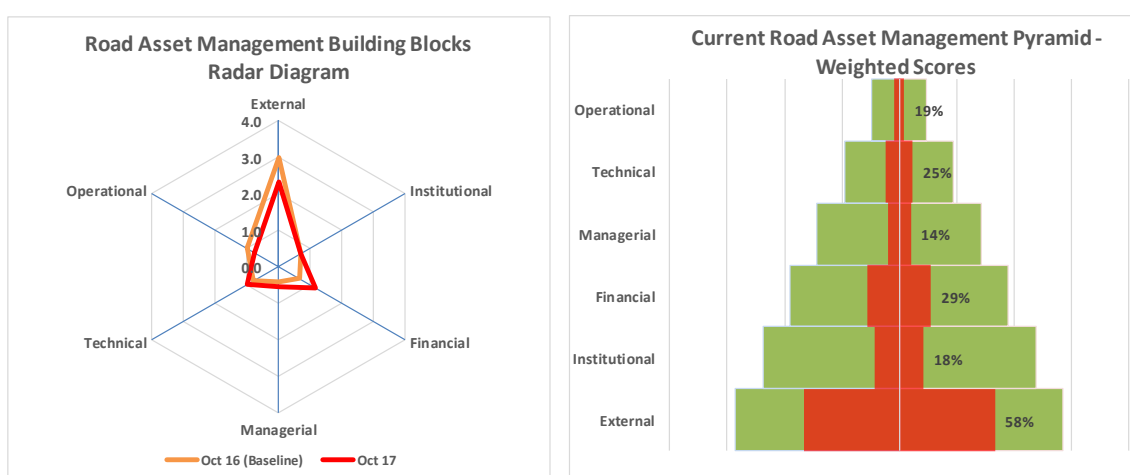


Table 8: Changes in AM Practices – Tonkolili District

AM Building Block	AM Aspect	Move	Detail/Justification/Evidence
External/Political	National policy for rural roads	↑	Policy exists, mis-reported at baseline. Policy specifies 15% of road fund proceeds to be allocated to rural roads.
	Existence of rural road maintenance strategy	↑	Rural roads maintenance policy in place and demands that strategies for sustainable rural road maintenance be prepared.
	Stakeholder consultation	↑	Stakeholder consultation is undertaken albeit without formal guideline. Element was under-reported at baseline stage.
	Tabling of budgets	↑	Budgets tabled at council meeting and approvals required before implementation. Now as strict requirement.
Institutional	Staff roles and responsibilities	↓	There is no AM policy in place, mis-reported at baseline.
	Staff training and capacity building	↑	Opportunities arose through training session arranged by the RMFA, NGO's and Ministries.

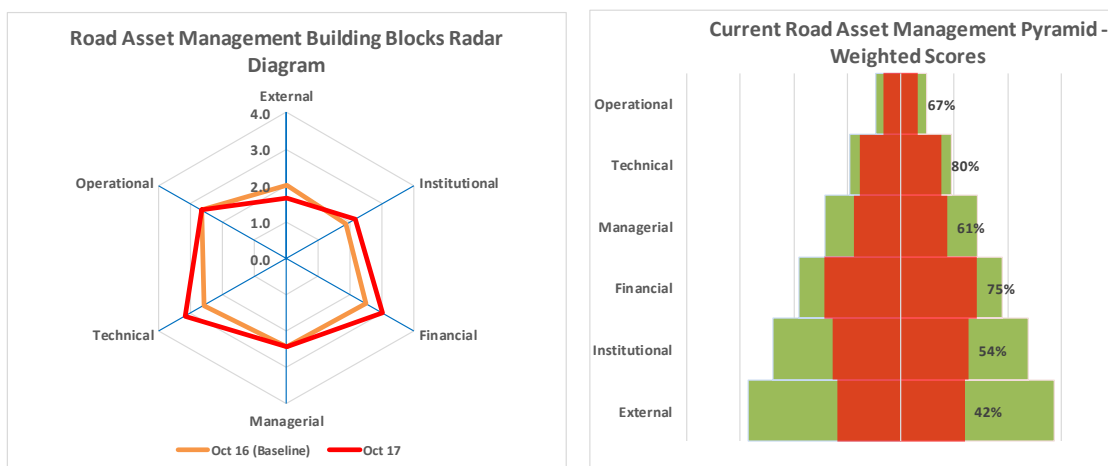
AM Building Block	AM Aspect	Move	Detail/Justification/Evidence
Financial	Provision of road maintenance funding	↑	District also allocates own funds for maintenance and receives from NGOs for periodic maintenance works. Funds also received from the Road Fund. EU is funding road improvement projects in the district.
	Budget funding - asset value	↓	At baseline stage there was no asset valuation, had reported maintenance funding as greater than 0.1% of network asset value, but was found to be less
	Accounting system	↑	Financial accounts are audited and published annually.
Managerial	AM system	↑	GEM system adopted and in use.
Technical	Road inventory data	↑	Data is not based on assumptions as the GEM introduced approach is in use.
	Road condition assessment	↑	Assessment being done annually and using documented procedures introduced under the GEM project.
Operational			No changes since the baseline.

### Commentary

Tonkolili District council has strong support from the council with the chairman of council also sitting in the Roads Committee. SLRA provides technical support to the council through secondment of an engineer who is working full time and based in Tonkolili. The funding remains a major challenge as most of the money allocated is spent on township roads and very little on feeder roads. Tonkolili has a large rural network and the roads selected under the GEM project have not been funded for maintenance. This has had a negative effect on the effectiveness of the support given so far to the district since there has been very little opportunity to put into practice the lessons learnt during the project.

### 9.2.6 Western Cape Province

Figure 9: Summary of Performance Self-Assessment, Western Cape



**Table 9: Changes in AM Practices – Western Cape**

AM Building Block	AM Aspect	Move	Detail/Justification/Evidence
External/Political	National policy for rural roads	↑	National policy in place, however is silent on stakeholders to be consulted in managing rural road or sources of funds.
	Existence of rural road maintenance strategy	↑	
	Stakeholder consultation	↓	Stakeholder consultations not undertaken annually as previously reported.
	Tabling of budgets	↑	Local stakeholders participate in preparation of plans and programmes and budget allocations; agency also participates in inter-sectoral and inter-agency programmes.
Institutional	AM policy development	↑	AM policy now aligned with the agency's corporate vision and mission.
	Level of service - use	↑	Levels of service integral to decision making and business planning.
Financial	Budget funding - asset value	↓	Percentage of maintenance funding now greater than 1.5% of asset value.
	Accounting system	↑	Financial accounts are published annually; aspect mis-reported at baseline stage.
Managerial	AM system	↑	AM system facilitate the prioritisation of road sections requiring maintenance.
	Maintenance plans - existence	↑	Plans for periods of more than 5 years in place.
	Maintenance plans - methods used	↑	Maintenance and rehabilitation expenditures are being prioritised using techniques which consider economic and social benefits.
Technical	Road condition assessment	↑	Results of gravel and earth roads assessments are recorded in computerised AM system.
Operational	Maintenance planning	↑	Day to day planning of maintenance is optimised by considering the availability of resources and impacts on road users.
	Reporting	↑	Reports are prepared on a daily and weekly basis for all maintenance activities.

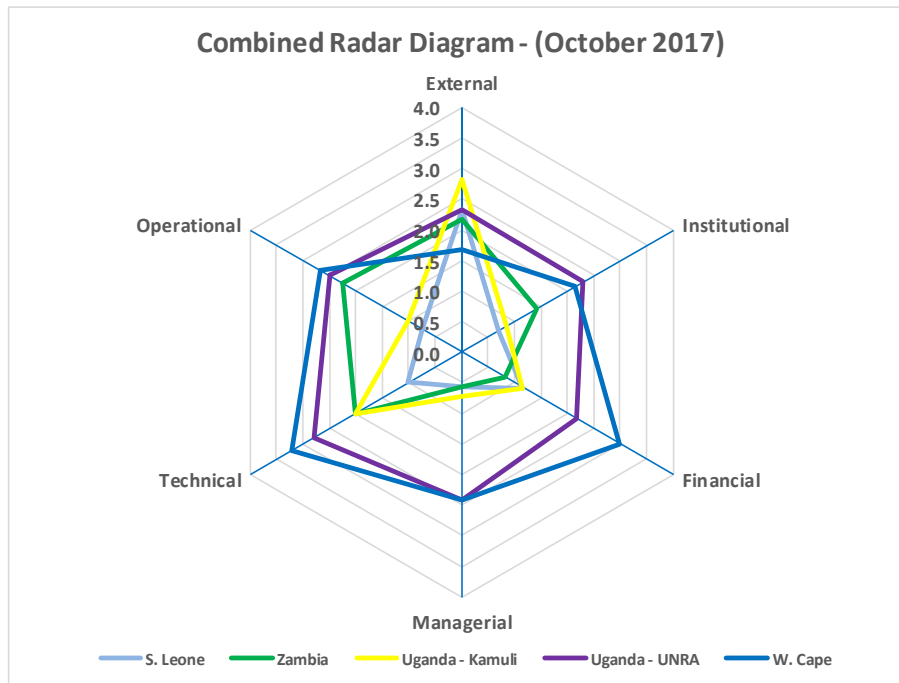
**Commentary:**

The Western Cape, in contrast with the other participating agencies, enjoys sound management capacity and highly technically qualified personnel in the roads section. The funding arrangements are robust and predictable making planning for maintenance work relatively easier than the other three participating countries. Due to the technical nature of the work and the well-established institution operating in the Western Cape, there is limited interaction with the External political arm of governance as the procedures and policies for allocation of resources are well institutionalized. The Western Cape offers good lessons for the rest of the project countries under GEM.

### 9.3 Comparative Analysis of GEM Project Agencies

A comparison was carried out of AM performance scores achieved by the five participating agencies based as at the end of 2017. The results are shown in the combined radar diagram in Figure 10.

Figure 10: Combined Radar Diagram as at October 2017



#### Commentary:

The radar diagram in Figure 10 summarizes the prevailing situation in the five participating road agencies. Of particular interest is the greater funding available to Uganda UNRA and Western Cape, which are not local authority roads agencies. UNRA, being the national roads authority for Uganda, enjoys better funding than Kamuli District Council since it covers the national main and trunk road network as well as part of the sub national feeder roads. This demonstrates that where legislation supports the allocation of funding to the road agency, there are greater chances for receiving resources whereas where the responsibility is given without supporting legislation, the road agency tends to suffer from non-provision of funding. Equally, the management capacity for UNRA and Western Cape by comparison with the rest of the road agencies remains much higher with good managerial capacity and stable institutional arrangements.

### 9.4 Measurable AM Baseline Data

Measurable road asset management data were collected for the participating agencies during the monitoring exercise in September/October 2017 and included in Annex 12. These data were reported as part of the baseline surveys undertaken in 2016.

The asset management aspects for which the measurable data were collected were extracted from the self-assessment questionnaire and the road network inventory and condition assessments. Where “benchmark” figures are given, these were either targets set by the roads agency or are from regional good practice. In most cases the “benchmark” values are still to be set.

## 9.5 Rural Road Sector Sustainability Index (RSSI)

In discussions with the agencies in the participating areas, it was realised that the building blocks contribute to different extents to achieving satisfactory asset management performance. Therefore, it was necessary to assign weightings to each building block in the process of combining scores to build up the Road Sector Sustainability Index for each agency.

The External building block was given the highest weighting of 2 as it is regarded as the most important determinant of performance. The Institutional, Financial, Management, Technical and Operational blocks were then given weightings of 1.8, 1.6, 1.4, 1.2 and 1.0 respectively. The weightings were then converted to coefficients by dividing the weighting by the sum of all of the weightings. The coefficient was then multiplied by the self-assessment questionnaire score for each building block to yield a score for each block. The sum of these results then gave the “Rural Road Asset Management Assessment Score”. The maximum value for this score is 4.

By dividing the Rural Road Asset Management Assessment Score by 4 an index of performance between 0 and 1 is obtained. This index was initially known as the Rural Road Preservation Index (RAPI) and was defined as *“the extent to which the necessary policies, funding and institutional capacity are in place to ensure the sustainable provision of roads”*. Following extensive discussions over the year since the baseline study, the index has been renamed as Road Sector Sustainability Index (RSSI) but based on the same definition as for the RAPI.

The calculation of the Rural Road Asset Management Assessment Scores and the Road Sector Sustainability Indices for the five participating agencies is given in Annex 12, with a summary of the RSSI’s indicated in Table 10. This includes a simple rating of the current status in the agencies as “Very Poor”, “Poor”, “Fair”, “Good” and “Very Good”. The table shows movement in the RSSI between the baseline and October 2017.

**Table 10: Road Sector Sustainability Indices Summary – All Agencies<sup>6</sup>**

AM Building Block	Sustainability Indices														
	S. Leone			Zambia			Uganda - Kamuli			Uganda UNRA			Western Cape		
External	0.58	▼	-22%	0.54	▲	117%	0.71	▼	-6%	0.58	▲	0.56	0.42	▼	-17%
Institutional	0.18	●	0%	0.36	▲	43%	0.21	▲	50%	0.57	▲	0.23	0.54	▲	15%
Funding	0.29	▲	75%	0.21	▲	150%	0.29	▲	40%	0.54	▲	0.44	0.75	▲	20%
Managerial	0.14	▲	33%	0.14	▲	33%	0.18	●	0%	0.61	▲	0.89	0.61	●	0%
Technical	0.25	▲	25%	0.50	▲	43%	0.50	▲	25%	0.70	▲	0.40	0.80	▲	23%
Operations	0.19	▼	-25%	0.56	▼	-4%	0.25	●	0%	0.63	●	0.00	0.67	●	0%
Road Sector Sustainability Index (RSSI)	0.32	▼	-5%	0.37	▲	68%	0.39	▲	8%	0.59	▲	43%	0.58	▲	6%

AM Building Block	Sustainability Grades				
	S. Leone	Zambia	Uganda - Kamuli	Uganda UNRA	Western Cape
External	C	C	B	C	C
Institutional	E	D	D	C	C
Funding	D	D	D	C	B
Managerial	E	E	E	B	B
Technical	D	C	C	B	B
Operations	E	C	D	B	B
Road Sector Sustainability Grade (RSSG)	D	D	D	C	C

KEY:					
RSSI Scale	0-0.20	0.2-0.4	0.4-0.6	0.6-0.8	0.8-1.0
RSSG Scale	E	D	C	B	A
Remark	Very Poor	Poor	Fair	Good	Very Good

### Commentary

The indices above confirm the analysis that out of the five road agencies, UNRA and Western Cape have more advanced technical and managerial capacities than the other three, partly due to consistent and predictable funding and relatively better qualified personnel. The weak institutional arrangements coupled with poor funding and lack of political commitment has adversely affected the three local authority road agencies.

The considerable improvement in performance reported in Chongwe (Zambia) and UNRA since the baseline appears to be over-stated but is apparently due to misunderstanding of some of the questions in the baseline self-assessment. The scores will be verified on the 2018 assessment.

Improvements in the funding index have been achieved despite the inadequate financing of road maintenance. The index also measures the status of financial systems, audit status etc.

Reporting on trends in asset management performance following the 2018 round of self-assessments will differentiate between:

- GEM induced improvements;
- Under-reporting or over-reporting changes; and

<sup>6</sup> The actual baseline values for each building block are included in Annex 12.

- Non-GEM induced movements, for example interventions by third parties.

## 9.6 Road Condition Monitoring and Asset Valuation

### 9.6.1 Purpose of Road Condition Monitoring

Road condition is a key variable for the measurement of social and economic impacts of access provision in rural communities. Improvement in rural roads asset management is expected to translate into improved roads condition. This will result in lower transport costs and improved availability of transport.

### 9.6.2 Identification of Project Networks

At commencement of the GEM project a road network was identified in each of the participating areas for GEM study purposes. An inventory of the roads and drainage structures was prepared as part of the baseline study in 2016. The inventory data is still mainly held in paper form by each agency. However, the agencies have now set up simple Excel based data bases that hold road identification and extent information, condition monitoring data and analysis results, bridges and culverts inventory and condition data.

### 9.6.3 Road Condition Monitoring

#### Visual Assessment

As per the project design, the participating roads agencies undertook baseline road condition surveys on the GEM road in 2016 followed by 1<sup>st</sup> round of condition monitoring surveys in the period September/October 2017. These surveys were undertaken at network level.

The road condition analysis was based on the conventional approach<sup>7</sup> where defects are identified visually, on segments of 5kms or less, and given a score of 1 to 5 on “degree” and “extent”. This enabled a condition index to be calculated for each segment, each road and for the network. It also enabled the calculation of road asset value. The parameters that are measured in the visual assessment were selected in accordance with the needs of the project road networks, which comprise predominantly earth and gravel roads. The parameters are:

- Gravel loss<sup>8</sup>
- Usable road width
- Erosion of the carriageway
- Erosion of the side drains
- Potholes
- Corrugations
- Rutting
- Impassability

The baseline and 1<sup>st</sup> round monitoring data from the participating agencies are included in Annex 12.

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<sup>7</sup> As set out in TMH 12 “Standard Visual Assessment Manual for Unsealed Roads”.

<sup>8</sup> Gravel loss is currently being assessed through the visual assessment in Zambia, Uganda and Sierra Leone. As the agencies develop more capacity, it is expected that the Western Cape practice of physically measuring gravel thickness will be adopted by the other countries.

## Functional and Condition Indices

The visual condition data have been used to calculate the following indices as defined in TMH 22 “Road Asset Management Manual”:

- **“Road Condition Index”** – a composite engineering index, a result of aggregation of visually assessed degree and extent of the following defects at road level: gravel loss, usable width, erosion of side drains and carriageway, potholes, corrugations and rutting; measured as a percentage.
- **“Functional Index”** - an appraisal of the road in terms of functional characteristics that affect the quality of use, notably comfort (convenience) safety, congestion and operating cost. The degree and extent of the following defects are considered: potholes, rutting, corrugations; measured as a percentage.
- **“Condition Index - Pavement”** - the numerical rating of the road pavement/gravel layer depending on its structural integrity or condition, remaining layer thickness and usable width, measured as a percentage.
- **“Condition Index - Formation”** - the numerical rating of the road formation depending on remaining usable width, integrity of formation and erosion/gullyng of side drains, measured as a percentage.

The results of the analysis of the data from the participating agencies is included in Annex 12.

### 9.6.4 Asset Valuation

As part of the framework of asset management, asset valuation has been used under the GEM project to calculate the current and future value of the road asset portfolio in each agency.

To determine the value of the road asset the following steps were undertaken at baseline stage in 2016 as well at the 1st round monitoring stage in September/October 2017:

- Establishment of a structured road inventory indicating road type and length.
- Determining Expected Useful Life of the formation and pavement.
- Establishing the condition of the pavement and road formation through the condition surveys mentioned above.
- Determining Remaining Useful Life of the pavement and formation taking the condition into account.
- Setting unit rates for calculation of replacement cost.
- Calculation of Current Replacement Value.
- Calculation of Current Asset Value.
- Calculation of Road Asset Preservation Index.
- Calculation of Road Asset Funding Index.

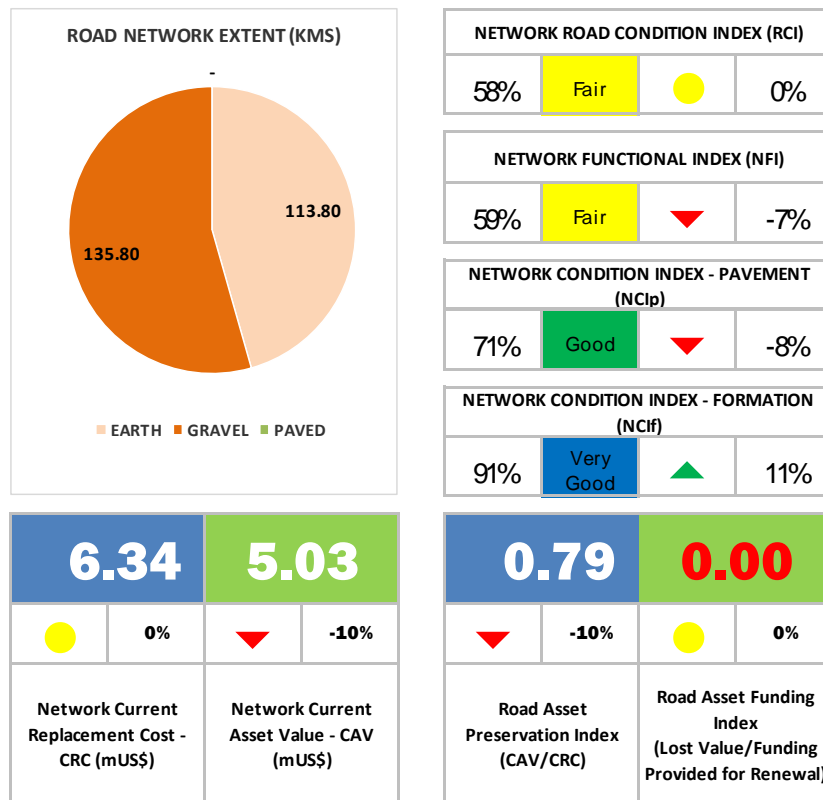
The adopted definitions of the two indices mentioned above were as follows:

- **“Road Asset Preservation Index”**- The ratio of the road network Current Asset Value (CAV) divided by the road network Current Replacement Value (CRV).
- **“Road Asset Funding Index”**- Capital funds provided for road network Asset Renewal (periodic, rehabilitation + reconstruction) divided by Quantified Needs for the same.

### 9.6.5 Road Condition and Asset Valuation Results

Results of the road condition assessment and asset valuation processes by the agencies as at October 2017 are given in Figure 11 to Figure 14, with indications of movement in each parameter. The tables also show the extent of the network.

Figure 11: Road Condition Assessment and Asset Valuation – Chongwe Municipality (Zambia)

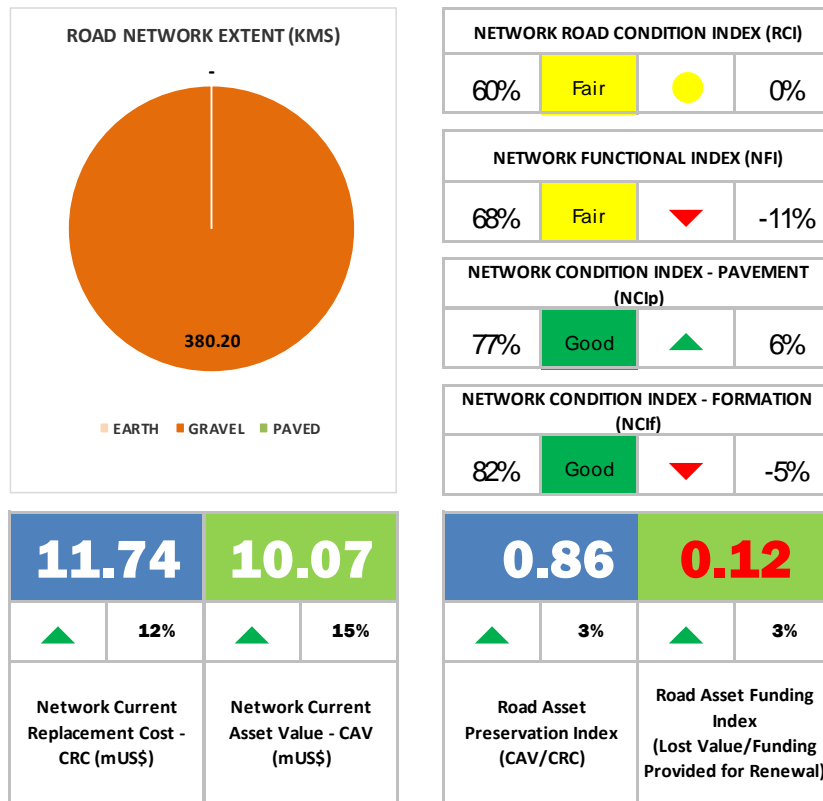


#### Commentary

The functional and pavement indices have declined due to lack of funding for maintenance. This has resulted in a reduction of the Network Current Asset Value and hence the RAPI. There was no funding for maintenance on the GEM networks in 2017.

It can be noted in the dashboard that the Network Formation Index improved in a situation where there had been no provision of funds for improvements. This change can be attributed to changes in the composition of the road condition assessment teams, with new members judging road conditions differently. The accuracy of the data is expected to improve over time as the survey teams obtain more experience. The Road Asset Management Guideline document that will be produced as part of the GEM project will include protocols for data collection and contribute to improved consistency.

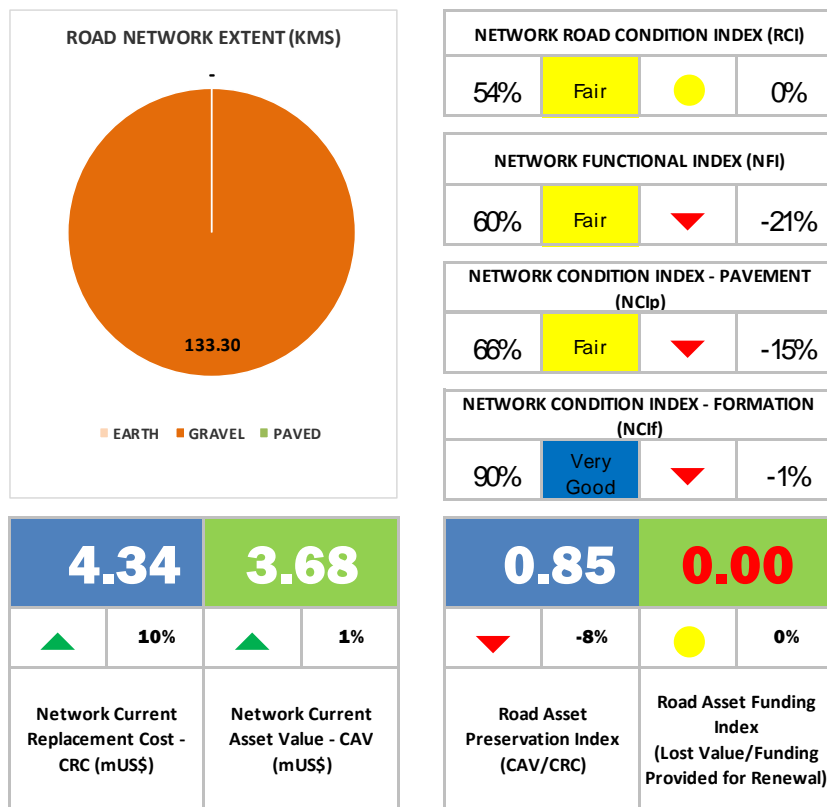
Figure 12: Road Condition Assessment and Asset Valuation – UNRA (Uganda)



**Commentary**

The data shows an improvement in the Network Condition Index and the RAPI. This is despite a very low value of the RAFI and no routine maintenance during the year. The 2018 data will be analysed for similar trends. The accuracy of the data is expected to improve as the survey teams obtain more experience.

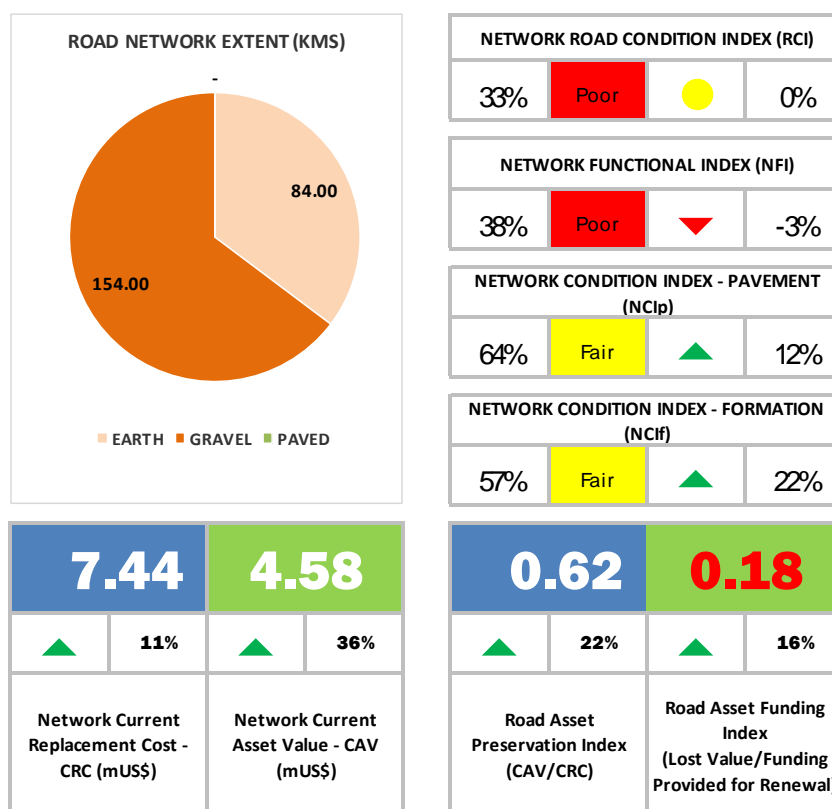
Figure 13: Road Condition Assessment and Asset Valuation – Kamuli (Uganda)



**Commentary:**

The network condition indices have declined due to no maintenance carried out during the year. The RAFI score is zero and there was no funding for routine maintenance during the year. The increase in the CAV is due to a reclassification of earth roads as gravel roads. The accuracy of the data is expected to improve as the survey teams obtain more experience.

Figure 14: Road Condition Assessment and Asset Valuation – Tonkolili (Sierra Leone)



**Commentary:**

There were some improvements to the condition indices and an increase in the CAV due to a donor funded rehabilitation project in the district. No funding was provided for routine maintenance during the year. The accuracy of the data is expected to improve as the survey teams obtain more experience.

**9.7 Conclusions and Recommendations**

**9.7.1 Review of GEM Tools**

**AM Questionnaire**

The Self-Assessment Questionnaire was improved for the 2017 self-assessments through the inclusion of additional questions under the External building block, and the reordering and rewording of some of the questions.

The improvements did not result in major changes to the final scores derived from the questionnaire, but the following outcomes were observed:

- The agencies now tend to more uniformly interpret the meaning of the questions;
- The structure of the questions demanded greater self-introspection and orderly answers; and
- A NO answer to most of the questions would not yield a YES in the subsequent question and this helped in the identification of AM capability gaps.

The questionnaire is serving as a checklist for the road agencies in identifying weaknesses. This has helped in focusing attention towards the weak areas, which are mainly in the financial, external and

technical areas. The continued use of the questionnaire provides consistency in assessing performance as it asks the same question after a period of implementing recommendations arising from the previous assessment.

### **Road Condition and Asset Valuation**

The district roads agencies are not experienced in the routine collection of condition data on the road network. The accuracy of the visual inspections is expected to improve as the teams gain experience. However, this depends on the road agencies being able to retain the same staff. The Road Asset Management Guideline document that will be produced as part of the GEM project will contribute to improved consistency in the longer term. In the Western Cape the collection of road condition data is outsourced to consulting firms.

#### **9.7.2 Maintenance Planning and Implementation**

The current rural road networks in all the three participating countries are not a product of a planned road network process, but rather a result of responses to social and political pressures from the stakeholders. The need to rationalize the road network through observing set criteria for identifying feeder roads based on socio – economic considerations will help in streamlining development and identification of a critical core road network that will provide equitable distribution of services in a cost effective manner. The expansion of road networks should be guided by policies that will ensure that all the capital investments made will be preserved through provision of commensurate maintenance funding.

In all the three district road agencies, very little maintenance work was carried out in 2017 due to lack of funding. However, the road condition surveys and inventory information has helped the road agencies to improve on quantifying the amount of work that is required to be done on each road. The road asset evaluation provides a guide to planning and budget estimates for future funding requests.

Due to the continued deterioration of the roads in the three districts, the extent of remedial work now required is beyond routine maintenance. Most of the roads now require substantial rehabilitation works to bring them to a maintainable condition. The planning for capital works, periodic maintenance and routine maintenance activities will have to recognize this disparity and equally the funding of works needs to take cognisance of the prevailing situation. The GEM project has made the roads agencies more aware of the effects of lack of funding as well as the need for effective planning for the use of the inadequate funding they are receiving.

The GEM project has developed standard formats for the identification of routine, periodic and rehabilitation works, and road agencies are familiar with the planning procedures. The road agencies are encouraged to prepare comprehensive work plans and submit them to the Road Fund. These submissions will help to keep track of the funding deficit and assist in measuring the performance of each road agency based on the planned works and what works were eventually funded. This process needs to be standardized for all road districts to allow the funding authority to evaluate submissions before allocation of funds.

The road inventory and condition surveys have identified the roads in each participating district. The road condition surveys have also provided the state of roads. Based on this information, the districts can now produce short, medium and long term plans to rehabilitate, repair and maintain the roads. Through the consultation processes now in place within the districts, it is possible to prioritize the roads according to demand but also fulfilling a wide spatial distribution of resource. The GEM project

has developed standard forms for producing annual maintenance plans that provide a detailed breakdown of activities and costs. These forms also assist in programming of works within a given time frame

Standard reporting forms for monitoring maintenance works have been developed and introduced to all the districts. These forms can be maintained in electronic form and analysed periodically to inform future decisions by management. The paper form is used for collecting information from the field and handed to the district engineer to enter the data into the relevant reporting files. The GEM project has managed to kick start basic reporting system and keeping of records within the districts. This practice needs to be pursued and installed as good practice within the road agencies.

### **9.7.3 Capacity Building in District Councils**

The GEM project has developed capacity within the participating countries to appreciate the need to have an asset management system within the organization. This has resulted in establishing a road inventory for the district and a procedure for road condition surveys. Further capacity building initiatives are needed to strengthen district council personnel in putting to practice most of the training received during the project period. Specific training needs for each district council will require additional support either through mentoring by GEM advisory staff or through attendance of specific short training courses at identified institutions. A staff exchange programme with road agencies like the Western Cape could be a good opportunity for district staff to learn from experiences elsewhere.

### **9.7.4 Maintenance Funding**

The establishment of road funds in all the three participating countries has not resulted in improved funding of rural road maintenance activities. The funds collected under the fuel levy and other revenue sources have been channelled to construction of main and trunk roads leaving the rural feeder roads without any funding. Maintenance on the major trunk and main roads is also not fully funded although it is given priority over feeder roads. The current revenue streams are not sufficient to cover all the maintenance requirements hence the need to identify other sustainable sources of funding for road maintenance.

Workshops on the development of Asset Management policies were held in all the three participating countries and the AM framework discussed in detail. Based on the six building blocks, the road agencies are well informed on the critical issues to be observed. The success of the AM is affected to a large extent by the level of funding that goes to the road agencies. Most of the plans are failing to be implemented due to lack of funding. This issue will be addressed through the proposed Scoping Study by the GEM Africa Road Financing Expert.

Since the inception of the GEM project, district councils have improved in their engagement with stakeholders, both the road users and the funding authorities. The introduction of a Communications Expert on the project has raised awareness within the road agencies. However, the higher-level decision makers (permanent secretary and Ministerial level) need to be engaged in order to influence a shift in policy in allocation of resources. This level of engagement is beyond the capacity of the GEM advisory team and requires direct intervention by DFID and ReCAP management in support of the work that is proposed to be carried out by the Africa Road Financing Expert.

## 10 PhD Research Progress Reports

### 10.1 Establishing the true value of low volume rural roads in low income countries (Kakiiza Kagaba Robert)

#### Summary of activities

Robert Kakiiza made one study visit to Birmingham in the reporting period as follows:

- 18<sup>th</sup> February 2018 to 23<sup>rd</sup> March 2018

During his visit Robert Kakiiza focused on his Systematic Review which is considering approaches to monetising social benefit (i.e. social accounting approaches), he completed an article which has been accepted for the RECAP website blog post and he finished his nine-month formal progress report.

Robert Kakiiza's progress review process was similar to Peter Kome's although he was reviewed by a different academic. Following the formal assessment process, the School of Engineering Research Panel and his two academic supervisors it is recommended that Robert continues as normally registered and his progress is deemed to be satisfactory. The main focus of Robert's research to date is in the form of a Systematic Review of social benefit approaches which could be used for rural roads. Robert has developed his Review protocol and has obtained several thousand papers to assess. The Systematic Review process is a much more involved and evidence drive approach compared to the standard literature review and takes at least one year to complete satisfactorily, if not longer. In Robert Kakiiza's case the University expects it to take up to 18 months and is therefore not expecting any outputs from his work for the time being.

Currently Robert Kakiiza is drafting a conference paper entitled "A methodology to capture the socio-economic benefits of rural roads". This is to be submitted to the 2018 SARF/IRF/PIARC Regional Conference for Africa in October 2018.

Robert Kakiiza's official 9-month progress review report and the GRS 3 forms have been submitted separately to ReCAP management.

### 10.2 A probabilistic tool to calculate short and medium-term rural road network condition as a function of maintenance expenditure. (Peter S. Kome)

#### Summary of activities

Peter Kome has made two study visits to Birmingham in the reporting period as follows:

- 15th January 2018 to 13th February 2018
- 17th April to 18th May 2018

During the former visit he continued with his literature review, developed his initial asset management model, had an article accepted for the RECAP website blog post and prepared his nine-month formal progress report.

The formal review involved producing a nine-month report on his progress towards meeting his research aims and objectives and attending a review meeting with an independent academic member of staff. The report was formally assessed by his academic supervisors and independently by his reviewer. The review process was captured formally by a form known as a GRS3 form. This form requires the student prior to their review meeting to self-assess their progress against a number of metrics, for the supervisors to comment on this assessment and then for the reviewer to

present their comments. Thereafter the form is returned to the supervisors to make comment in relation to the student's progress and to formally suggest whether the student can continue their studies, be transferred to a lesser degree or be asked to withdraw. The report and recommendations are considered at a formal School of Engineering Research panel meeting. The panel then give their recommendation. In Peter Kome's case his progress was deemed to be satisfactory.

Peter Kome's official 9-month progress review report and the GRS 3 forms have been submitted separately to ReCAP management.

## 11 The Way Forward

### 11.1 Task for the Next Reporting Period

The following tasks are expected to be carried out in the next three-month reporting period:

- Visit of the Rural Transport Economist to Uganda and Sierra Leone to discuss the data collected in the second round of the socio-economic survey and to prepare for the third round.
- Visit of the Road Maintenance Expert to Sierra Leone and Uganda to advise on improvements to the planning and management arrangements for road maintenance and to update the agency action plans and prepare for the 2018 round of data collection.
- Visit of the Communications Expert to Zambia to assist Chongwe Municipality to prepare their communications activities.
- “Scoping study” of issues that need to be addressed to improve funding for road maintenance in Zambia.
- Meeting on the funding of road maintenance in Uganda (still to be approved by UNRA).

### 11.2 Longer Term Plans

The following plans are being pursued for the longer-term implementation and conclusion of the GEM project:

- The GEM technical assistance will increase their focus at the national level in the participating countries to investigate ways of unblocking constraints to disbursement of funds for road maintenance. GEM will also encourage the national level agencies to use GEM indicators in their monitoring.
- GEM technical assistance to the district roads agencies will continue under the current arrangement that includes periodic visits of the GEM advisers. The immediate priority is to finalise the socio-economic data from the 2017 survey and prepare for the 2018 data collection (all road management aspects) towards the end of the year.
- In about August/September 2018 it is expected that CSIR will facilitate a workshop in Zambia on the methods they have developed for assessing climate vulnerability of rural roads. This will include discussion on a basic level of assessment that local roads agencies (e.g. Chongwe Municipality) should carry out as part of their road asset management. The intention is to incorporate this aspect in the 2018 data collection for the GEM project.
- It is proposed that the GEM Road Condition Monitoring Expert should make a further visit to Tanzania to help TARURA to a) prepare an action plan from the performance assessment carried out in late 2017, b) prepare for a further self-assessment in October 2018 c) establish values for the GEM indices for the TARURA network (if possible). It is proposed that Tanzania should participate in the next PIT.
- The next PIT will be a stand-alone event (not part of another conference). It will probably be held in Zambia and will include a site visit to Chongwe where the tractor-based maintenance project should by then be in operation. The meeting will discuss all aspects of road asset management including the financing challenges and optimising the use of available resources.
- Following an assessment of all of the above activities towards the end of 2018, a decision will be made on whether GEM should be extended to mid-2020, which is the end of the current ReCAP.

- It is clear that effective “high level” engagement with policy makers in the governments of the participating countries will only be possible with direct interventions by DFID and the ReCAP Programme Management Unit.

### 11.3 Summary of Project Risks and Mitigation

Several risks to the successful achievement of the project objectives have been identified. These are summarised in Table 11.

**Table 11: Project Risks and Mitigation Measures**

<b>Risk</b>	<b>Mitigation Measures</b>
Inadequate funding allocations for road maintenance prevents participating agencies from implementing maintenance works on GEM project networks.	<ul style="list-style-type: none"> <li>• Increased lobbying at higher levels for more funding for maintenance through External Communications component and Zambia Scoping Study on maintenance funding.</li> <li>• Prepare best practice guidelines for funding of rural road maintenance.</li> <li>• Extend GEM project network to cover all roads in the district that receive maintenance.</li> </ul>
Weak capacity in the participating countries prevents the roads agencies from achieving their Action Plans and performance targets.	<ul style="list-style-type: none"> <li>• Additional training for agency staff.</li> <li>• Increase the profile of the peer review process between the participating countries.</li> <li>• Involve additional districts in each country to create an internal peer review process.</li> <li>• Extend the duration of the project to provide more time for capacity development.</li> </ul>
High staff turnover in district roads agencies.	Prepare a Road Asset Management Guideline clearly describing the performance assessment procedures and the indices developed under GEM for use by new staff (this is already a planned project output).
Inadequate funding of Communications activities at the district level.	Identify low cost communications activities.

## Annex 1 C Lema and G Muhia Zambia Visit Programme and People Met

Itinerary	Date	Remark/Logistics	Issues
Arrival in Zambia	27/2/18	Night in Lusaka	
RDA Office in Lusaka Travel to Chongwe and meetings Travel back to Lusaka	28/2/18	9.00 – 10.30 am 11.00 am – 16.00 pm 16.30 pm	<ul style="list-style-type: none"> <li>Briefing on the program of visit.</li> <li>Consultative meeting with Sociologist in the Planning and Design dept. on socioeconomic M&amp;E of rural roads under RDA.</li> <li>Detailed review of socio-economic repeat survey data and discussion of preliminary analysis results.</li> <li>Reviewing the communication tools in place.</li> </ul>
Travel to Chongwe and working sessions Field visit to Chilyabale trading centre along Mwalumina road. Travel back to Lusaka	1/3/18	9.00 am – 14.30 pm 15.00 – 16.30 pm 16.30 pm	<ul style="list-style-type: none"> <li>Introductory meeting with the new CMC management team.</li> <li>Continuation of review of repeat survey data.</li> <li>Establish the perception of communities on socioeconomic impacts in relation to physical condition of the road.</li> </ul>
NRFA Office in Lusaka Travel to Chongwe and meetings Travel back to Lusaka and departure	2/3/18	8.30 am – 10.30 am 10.30am – 15.00pm 15.00 pm – 18.30pm	<ul style="list-style-type: none"> <li>Meeting with NRFA team on M&amp;E and rural roads maintenance financing.</li> <li>Meeting with the new CMC technical team on the progress of the GEM project and the challenge on maintenance financing.</li> <li>Discussion of next steps for socio-economic and communication components.</li> </ul>

### List of People Met

NAME	Designation/Organisation	Contact
Eng. Presley Chilonda	Principal Engineer, Roads Development Agency, RDA	<a href="mailto:pchilonda@roads.gov.zm">pchilonda@roads.gov.zm</a>
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Oivy Hamududu	Sociologist, Planning and Design Department, RDA	<a href="mailto:ohamududu@roads.gov.zm">ohamududu@roads.gov.zm</a> tel. +260 979 786670
Jovax Ngoma	Town Clerk, CMC	
Chola A. Fundi	Chief Admin. Officer, CMC	
Eng. Patrick Mushingenge	Director of Engineering, Engineering Dept. Chongwe Municipal Council, CMC	<a href="mailto:kpmushingenge@gmail.com">kpmushingenge@gmail.com</a>
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## Annex 2 C Lema and G Muhia Meeting with the National Roads Fund Agency

### In attendance:

- Grace Wahome and Camilla Lema, GEM Advisory Team
- Eng. Presley Chilonda, RDA
- Eng. Yohane Tembo (PhD), Director of Programming, Monitoring and Evaluation, NRFA
- Eng Alinani Msisya, Manager – Programming, Monitoring and Evaluation, NRFA
- Eng. Ngulube Z. Vernon, Manager – Programming, Monitoring and Evaluation, NRFA.

**Purpose of the meeting:** To learn how the NRFA performs monitoring and evaluation of maintenance activities and outcomes for rural roads.

To seek information on the level of funding for maintenance of rural roads, with the aim to understand better the challenges of funding facing the GEM project roads in Chongwe.

### Highlight of issues discussed:

- Zambia has a total road network of about 67,000km with the core road network of 40,000km that receives first priority for maintenance. Zambia prioritizes maintenance of main roads (part of the core road network) for allocation of roads fund and use of other sources /or approaches such as the Output and Performance Based Road Contracts (OPRC) that started in 2006 with support from the EU and currently the World Bank. It is not clear whether any of the GEM project roads is categorized under the core road network, even though they are all classified and qualified to receive money from the roads fund.
- Under the present legal framework for the roads sector in Zambia all roads including the local government roads are under the charge of the Roads Development Agency (RDA) overseeing development and financing matters.
- The Roads Fund in Zambia was established as a Secretariat in 1998 and transformed into an agency in 2002. Since then the budget has risen from US\$ 98 million to US\$ 860 million at present. Main sources of fund are the fuel levy and road toll.
- Before 2012 the Roads Fund had sufficient money to fund maintenance activities in the country. However, since 2013 the country has accumulated big debts /backlog of arrears because of some changes in the system and massive infrastructure development drive relying mainly on national resources that are limited.
- Annual work-plans for the roads sector in Zambia are currently more biased on upgrading than maintenance, which is not the wish of the NRFA. It is believed that in the current national budget about 80% of funds for the roads sector are spent on upgrading and rehabilitation while only 20% goes to maintenance. At minimum 24% to 30% should be allocated for maintenance.
- There is a challenge that the Roads Fund Act does not give the NRFA power to control allocation of money. The 60:40 (primary roads: local government) allocation was removed from the Act. Since then the local government allocation has kept on reducing by the year resulting in serious challenges in funding for rural and feeder roads in Zambia. Emphasizing the importance of maintenance of rural roads, the Director of M&E gave an example of Kasama – Mporogaso road which can take 8-hour drive during the rainy seasons but less than 2 hours after grading.
- The NRFA does independent technical audits annually to assess the value for money at implementation level, but due to the weaknesses in the Act they cannot enforce adherence to specifications and hold implementers accountable of what happens on the ground. It is expected that this shortfall will be addressed soon due to the ongoing consultative process to review the Act. A policy document is also being prepared for the roads sector in Zambia, which will

incorporate the current maintenance strategy (2014-2020) and give directive to maintenance allocation and spending.

- Prioritization of rural roads for maintenance is done in a consultative process involving the Ministry of Local Government (MLG) and the districts /municipals. In July – August every year the parties sit for an annual work-plan to define priorities.

### **Going forward**

- a) If the GEM project roads are to receive attention by the NRFA for funding then a special line should be inserted in the annual work-plan of MoLG to draw attention of decision makers on the project and its needs. This is to be followed by a letter from MoLG (vetted by RDA) directly to the roads fund specifying the request. This letter can be submitted in form of an executive order from the RDA, in such a case the NRFA will honor it upon verification of capacities and other requirements in the district.
- b) Since it is the discretion of MLG to give due recognition and desired support to the GEM project it is important for the project (with the support of RDA) to start engaging actively with the Ministry. This will ensure their buy-in and understanding of the nature and benefits of the GEM project in Zambia.
- c) It was agreed that RDA will draft a letter to the CEO of NRFA to introduce the GEM project, present status and needs.
- d) The GEM project advisory team will send the project assessment tools including the socio-economic questionnaire to NRFA for awareness.
- e) As a way to reduce the challenge of maintenance of feeder roads in Zambia there is need to build capacity of the local communities to do light maintenance, e.g. through a 'community-based maintenance management' system.

## Annex 3 RDA Communications Strategy

The Road Development Agency (RDA) is mandated to construct and maintain all public roads in Zambia in accordance with the Public Roads Act (No. 12 of 2002). As a good corporate institution, the RDA recognizes the importance of Communications as a tool to enhance relationships with stakeholders. The basic mission of RDA is to construct World Class Roads that will spur economic growth. This creates, first, a natural need to communicate the mandate of the Agency to all stakeholders who contribute to the construction of roads through payment of various Government taxes, levies and other road user charges. Secondly, communication should promote overall knowledge and awareness of RDA among various stakeholders. As a National Road Agency and with objectives that extend beyond just constructing roads, the RDA is accountable to Government, various stakeholders and the general citizenry. RDA also recognizes that Communications will provide stakeholders with information on the operations of the Agency, information which will enable stakeholders to make informed decisions that are critical for the social and economic development of the country.

The RDA communications are targeted into two areas.

- Internal Communication
- External Communication

### Internal Communication

The RDA's objective for internal communication is to support the institution in achieving the overall goals described in the RDA's mandate, mission and strategy. Furthermore, the internal communication shall strengthen the organizational culture and feeling of commitment among staff. Mutual information sharing is an important principle to ensure efficient internal communication. Staff will also act as a multiplier in reaching out to other stakeholders.

### External Communication

External communication, like internal communications, should support the Agency in pursuing the overall objectives of the institution described in its mandate, mission and strategy. External communication should also promote overall knowledge and awareness of RDA among its different stakeholders.

The RDA promotes and achieves external communication through:

- the development of the RDA Communication Strategy;
- ensuring there is awareness amongst stakeholders of relevant information regarding RDA operations;
- promoting a positive corporate identity; and
- maintaining and monitoring methods of external communications such as:
  - media relations;
  - agency website;
  - publications (Roads Magazine);
  - corporate events;
  - stakeholder meetings; and
  - presentations.

## **Communication Tools**

The RDA communications policy envisages employment of the following general communication tools:

- Corporate Magazine;
- In - house newsletter;
- Annual Reports;
- Radio and television programmes;
- Advertising campaigns;
- Speeches and presentations;
- Websites;
- Press releases;
- Newspaper columns;
- Press briefings; and
- Focus Groups.

The RDA policy recognizes the importance of engaging with key stakeholders outside the organization about key road developments in a timely manner. Under their communication policy, the RDA has categorized their audience into two: primary target audience and secondary target audience.

The primary audience comprises stakeholders with “high interest” and “high importance” while the secondary audience comprises all other stakeholders.

## **Information to be Communicated**

The RDA disseminates information to stakeholders on the following:

- Road Sector Annual Work Plan;
- Progress on projects;
- Legislation and policies in the road sector;
- Changes in the Agency;
- Other activities of the Agency;
- Information on litigation status;
- Service Charter;
- Information on sensitive matters that by its nature befits to be communicated within and outside the agency management, for example: exposures to threats, uncertainties, fraud, waste and mismanagement, illegal activities, abuse of power, misconduct that endangers public safety, or other wrongdoings that may adversely impact the Agency’s reputation, image, or success;
- Information on sensitive matters that already exists or to be created for external parties such as: previously issued internal audit report for the Auditor General, Drug Enforcement Commission and Anti-Corruption Commission;
- Information that relates to the Board;

- Information that relates to a Sub-Committee of the Board;
- Information that relates to the Board Chairperson.

### **RDA Stakeholders Analysis**

The RDA Stakeholders are identified as follows:

- The Executive branch of Government;
- The RDA Board of Directors
- Employees of the Agency;
- Members of parliament and other elected representatives;
- Contractors;
- Consulting Engineers;
- Road users;
- Media;
- Trade Union;
- Road Sector Agencies;
- Non-Governmental Organisations;
- Traditional Leaders;
- Private Organisations;
- Co-operating partners; and
- Public Organisations.

### **Stakeholder Needs Analysis**

The RDA has identified a number of stakeholders through a mapping exercise who the Agency endeavours to serve. The stakeholders and their needs are listed below.

#### General Public

The general public expects the RDA to:

- provide accurate and unbiased information on road development;
- report on the success of projects; and
- report on challenges faced in the implementation of projects.

#### Public Institutions

Public bodies expect the RDA to provide:

- accurate and unbiased information on road development;
- sensitisation on issues related to road development, for example the introduction of toll station; and
- an overall operational report of the Agency (Annual Report).

#### Private Institutions

Private institutions expect the RDA to provide:

- accurate and unbiased information on road development;
- reports on the success of road projects;
- information on good corporate governance and best practice; and
- leadership for the building of mutual partnerships with various private institutions;

#### Traditional leaders

Traditional leaders expect RDA to provide:

- accurate and unbiased information on road development in their chiefdoms;
- information on employment opportunities for their subjects;
- information on Corporate Social responsibility by contractors engaged on various projects;
- information on the scope of work for projects;
- information on the environmental impact of projects;
- reports on the success of road projects;
- information on good corporate governance and best practice; and
- leadership for the building of mutual partnerships with traditional leaders.

#### Government leaders/ Ministries / Agencies

- The executive arm of Government expects RDA to provide:
- accurate and unbiased information on road development;
- information on the scope of work for projects;
- information on the environmental impact of projects;
- reports on the success of road projects;
- information on good corporate governance and best practice;
- information on employment creation; and
- information on the economic and social impact of projects.

#### The public and road users

Road users and the general public expect the RDA to provide:

- quick, efficient and courteous service;
- resolution of issues raised by road users; and
- timely feedback.

#### The Board of Directors

The Board of Directors and its Sub Committees and may expect the RDA to:

- provide accurate and unbiased information on road development;
- report on success of projects;
- report on challenges faced in implementation of projects;
- report on corporate governance activities of the Agency
- report any other pertinent information.

The RDA determines the most appropriate channel of communication based on the needs and expectations of the target audiences.

## **Annex 4 Participants in Road Financing Meeting held at the RDA in Lusaka on 26<sup>th</sup> March 2018**

### **Participants**

- Thompson Banda (Senior Manager, RDA)
- Presley Chilonda (Principal Engineer, RDA)
- Changala Kanchule (Senior Engineer, MLG)
- Alinani Msisya (Manager Programming, Monitoring and Evaluation, NRFA)
- Philimon Goma (Principal Engineer, RDA)
- Christopher Nswira (Engineer, RDA)
- Kapeso Shikabonga (Socio Economic Planner, Chongwe Municipal Council)
- Musondo Mino (Ass. Public Relations Manager, CMC)
- Mutambo Lazarous (Civil Engineer, Chongwe MC)
- Nkululeko Leta (Deputy Team Leader Infrastructure, ReCAP)
- Rob Geddes (Team Leader, CDS)
- Mike Pinard (Institutional and Financing Expert, CDS)
- Joseph Haule (Africa Road Financing Expert, CDS)
- Kingstone Gongera (Road Maintenance Expert, CDS)
- Charles Bopoto (Road Condition Monitoring Expert, CDS)
- Rob Petts (Consultant, Intech/ReCAP)

## Annex 5 GEM Adviser Visit to Sierra Leone (Itinerary and People Met)

### Itinerary

Day	Activity	Participants
03 February 2018	Arrive Sierra Leone, Travel to Tonkolili	CTB (GEM Advisor)
04 February 2018	Tonkolili	CTB
05 February 2018	Meeting with country team: <ul style="list-style-type: none"> <li>• General discussion of project</li> <li>• Discussion on ongoing project</li> <li>• Discussion of problems being faced in implementing project</li> </ul>	District Engineer SLRA District Engineer Former Councillor GEM Advisor
06 February 2018	Working meetings/interactions at Tonkolili District Engineer's office <ul style="list-style-type: none"> <li>• Meeting with Acting Chief Administrator</li> <li>• Review condition survey forms</li> <li>• Refresh on data collection method</li> <li>• Refresher discussion on data analysis</li> <li>• Finalisation of GEM roads 2017 data analysis</li> </ul>	Acting Chief Administrator District Engineer SLRA District Engineer SLRA H/O Engineer Former Councillor GEM Advisor
07 February 2018	Working meetings/interactions at Tonkolili District Engineer's office <ul style="list-style-type: none"> <li>• Exercise to extend condition monitoring to entire network</li> <li>• Refresher discussion of Asset Valuation</li> </ul>	District Engineer SLRA District Engineer SLRA H/O Engineer GEM Advisor
08 February 2018	Working meetings/interactions at Tonkolili District Engineer's office <ul style="list-style-type: none"> <li>• Updating of Action Plan</li> <li>• Discussions on application for funding from Road Fund</li> <li>• Site visit</li> </ul>	District Engineer SLRA District Engineer SLRA H/O Engineer GEM Advisor
09 February 2018	Working meetings/interactions at Tonkolili District Engineer's office <ul style="list-style-type: none"> <li>• Training on gravel loss measurement</li> <li>• Finalisation of updating of Action Plan</li> <li>• Wrap up meeting</li> <li>• Travel to Freetown</li> </ul>	District Engineer SLRA District Engineer SLRA H/O Engineer GEM Advisor
10 February 2018	Depart Freetown for Johannesburg	CTB

## People Met

Name	Organisation	Designation	Email Address	Mobile Number
Tamba Amara	SLRA	Chief Engineer DD	<a href="mailto:tmannamara@gmail.com">tmannamara@gmail.com</a>	076649226
Samuel Macauley	SLRA	Engineer	<a href="mailto:sammacauley2005@yahoo.com">sammacauley2005@yahoo.com</a>	076690883
	Tonkolili District Council	Action Chief Administrator		
Sallieu Konneh	Tonkolili District	District Engineer	<a href="mailto:sallieukonneh@yahoo.com">sallieukonneh@yahoo.com</a>	078841909
Mohamed Lahai	SLRA/Tonkolili District	District Engineer	<a href="mailto:mohamedlahai12@yahoo.com">mohamedlahai12@yahoo.com</a>	076681876
John B. Bengura	Stakeholder	Former Councillor	<a href="mailto:johnbenbangura@yahoo.com">johnbenbangura@yahoo.com</a>	076851553

## Annex 6 Gravel Loss Measurement

### Gravel Loss Measurement (Research purposes)

The loss of gravel from unpaved roads is an essential part of investigation of innovative materials or construction techniques. Numerous techniques ranging from the incorporation of metallic sensors, Ground Penetrating Radar (GPR), the excavation of holes, etc. have been used in attempting to quantify gravel loss. However, only precise levelling surveys have been found to be sufficiently accurate for research purposes. The process for this is described below.

The process involves comparing the average height of a section of road over time with the height of fixed benchmarks. These benchmarks must be positioned at the start and end of the monitoring section, preferably in the road and placed so that they are unlikely to be affected by subgrade movements.

The setting of 500 mm steel rods (10 - 15 mm in diameter) in concrete blocks at subgrade level has been found to be satisfactory (Figure 1).

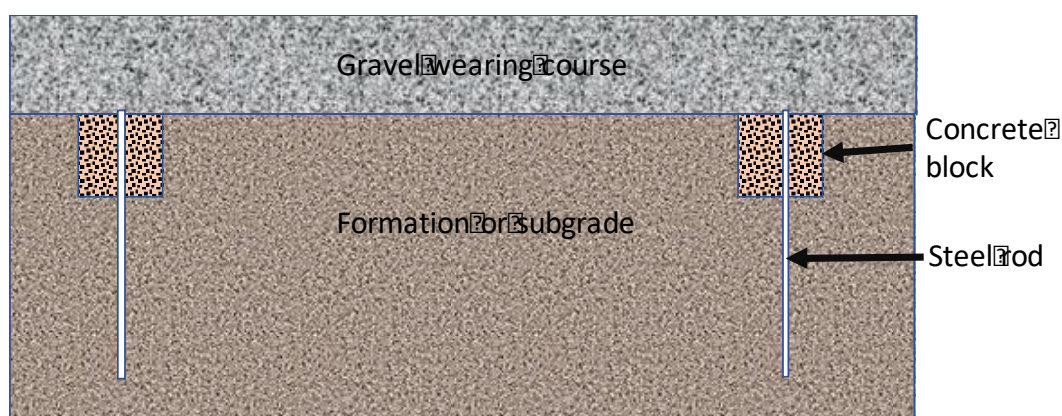


Figure 1: Placement of stable benchmarks

A gravel loss monitoring section will normally be 50 m long, on a flat and level section of road with no culverts or cross-drainage structures and should fit within the trafficked portion of the carriageway. The benchmarks should be placed at each end of the section and at least 3 (preferably 4) should be installed as shown in Figure 2.

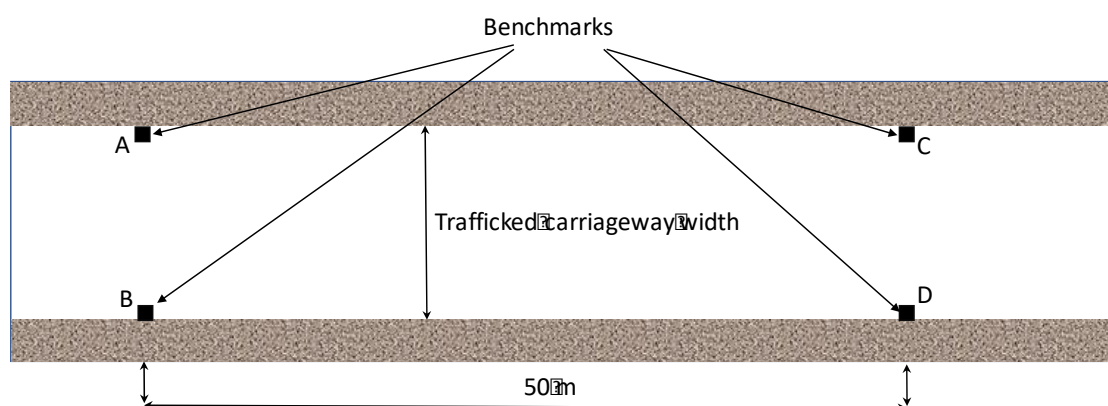


Figure 2: Location of stable benchmarks

The width of the monitored section (trafficked carriageway width) is usually between 5 and 8 or 9 metres and should be fixed at metre lengths.

During monitoring, the heights of each of the bench marks should be determined and checked against the previous heights to ensure that there has been no movement relative to each other. Two tape measures should then be laid out, one longitudinally along the 50 m length between the bench marks on one side (B and D) and the second transversely between the first two benchmarks (A and B).

A level should be taken at each 1-metre interval along the tape between benchmarks A and B. The transverse tape should then be moved to the point at 5 m along the longitudinal tape and measurements taken across the road again. This will continue at 5 m intervals until the final transverse measurement at 50 m giving 11 sets of readings, each numbering between 6 and 9 or 10 across the road. The objective is to try and take the level readings as close as possible to fixed points during each survey.

If there has been no differential movement between the benchmarks, any one of them can be used as a datum. The average height of all the readings is then calculated and the difference between this and the bench mark height determined. This is done at about 3-month intervals and a progressive change (decrease) in the height of the road relative to the benchmarks will be determined.

This can be plotted as the gravel loss with time.

### **Gravel loss measurements (Western Cape method)**

Sections for gravel loss measurements are selected based on:

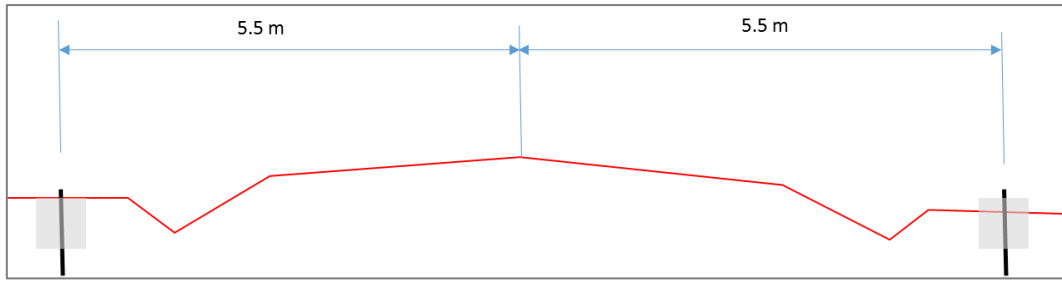
- Traffic
- Mean monthly precipitation
- Grading of material
- Plasticity Index
- Geometry. Categorized in flat, rolling, mountainous based on measured
  - Horizontal curvature
  - Rise and fall

A 100m section must be selected representing the selected geometry category. Therefore, if

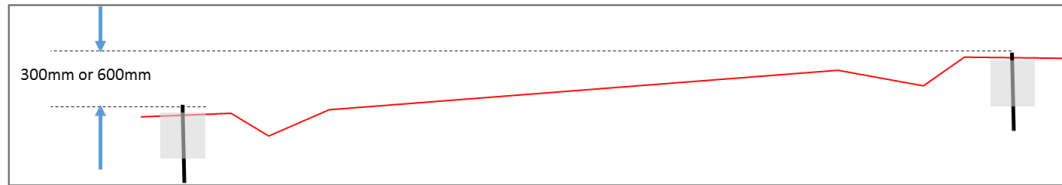
- Flat – select a 100m section with least possible gradient without curvature
- Rolling – The section should either be on a moderate slope and straight, or on a curve as flat as possible
- Mountainous – The section should either be on a steep slope and straight, or on a sharp curve as flat as possible.

The 100m section must not have any accesses within the section and the movement of the traffic must have as little as possible influence on the section, i.e. close proximity to accesses or road furniture that could force road users to slow down or accelerate. This could have an influence on the gravel loss/riding quality. The section must therefore be as uniform and representative of the general section as possible, without any varying external factors that could influence the performance.

Steel pegs must be installed at 20m intervals on both sides of the road at the same off-set from the centre line (5.5m from the centre line has worked well in most cases), but at constant intervals right through for all the sections, if possible (as close to the fence as possible) and the pegs opposite each other either at the same level or 300mm or 600mm higher. (The difference in height might be necessary in some cases).

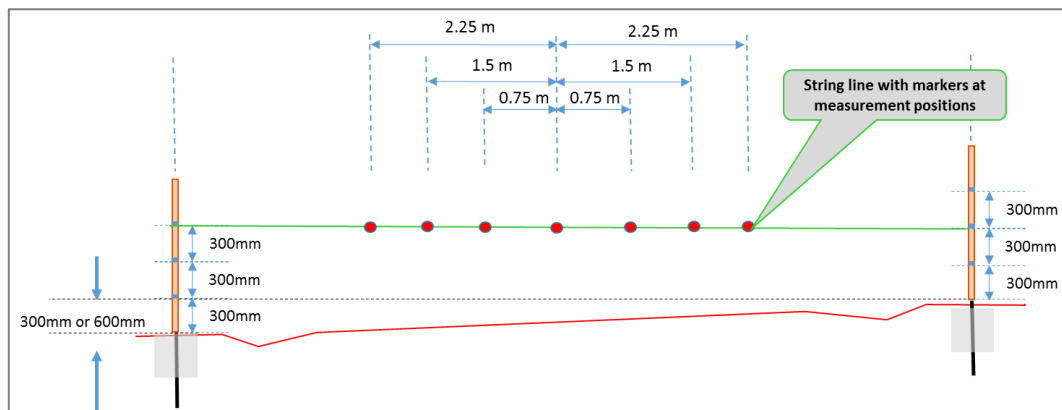


**Figure 3: Placement of pegs on level ground**



**Figure 4: Placement of pegs on sloping ground**

A string line is made up with markers at specific positions as shown in Figure 5.



**Figure 5: String line with markers**

The distance between the string line and the road surface is measured at each position and recorded in the following format.

DATE	POINT	Km Position	2,25 L	1,5 L	0,75 L	Center	0,75 R	1,5 R	2,25 R
12-Jul-16	E1.1	18.570	0.565	0.550	0.540	0.535	0.497	0.497	0.496
12-Jul-16	E1.2	18.590							
12-Jul-16	E1.3	18.610							
12-Jul-16	E1.4	18.630							
12-Jul-16	E1.5	18.650							
12-Jul-16	E1.6	18.670							



**Figure 5: Measuring gravel loss**

**Note: The alternative of using benchmarks with reference pegs and taking levels is also acceptable.**

## Annex 7 Updated Action Plan – Tonkolili District, Sierra Leone

No.	RAM Aspect	Action	Responsibility	Planned Completion Date	Status at Date: 08 Feb 2018	Revised Completion Timing	Actual Completion Date
1.1	Technical	Complete road condition surveys for baseline	District & SLRA Eng	End Dec 16	COMPLETE	COMPELETE	Oct 17
1.2	Technical	Analyse road condition data and input for baseline	District & SLRA Eng		COMPLETE	COMPLETE	Oct 17
2	Institutional	Completion of AM Policy	C.A. & District Eng, Roads Committee	15 Apr 17	Policy not yet finalized, affected by changes in staff	31 May 17	
3	Institutional	Recommend actions to be taken to solve AM gaps identified	Eng District & SLRA	30 Apr 17	Outstanding, no activities undertaken	31 Mar 2017	
4.1	External/ Institutional	Convene a special council meeting to present progress so far on the AM Project raising achievements realized so far.	Eng District & SLRA	7 <sup>th</sup> April 17	Complete	Complete	July 17
4.2	External/ Institutional	Convene a SECOND special council meeting to present progress so far on the AM Project raising achievements realized so far.	Eng District & SLRA	30 Sept 18	NEW		
5	External/ Institutional	Convene one day stakeholder meeting in Freetown to report on GEM progress so far	Tamba/Kome/Lahai	May 17	No progress	30 Sept 18	
6	Technical	Request for training in identified areas (Survey, Design of minor structures, Auto cad, Supervision of works, Planning of works, materials selection & reporting)	Eng District & SLRA	5 May 17	No progress, not done, approach adopted to make recommendations at PIT meeting. To now prepare formal SL proposal.	28 Feb 18	
5	Technical	Extend road inventory & condition surveys to remainder of road network in Tonkolili	District & SLRA Eng	July 17	Applied GEM method on two roads; to now extend to entire network and update condition assessment tool.	Desktop activities – end May 18 Fieldwork – end Oct 2018	
6	Technical	Quantify maintenance funding gap, and present to Council for support	District & SLRA Eng	Sept 17	Not commenced.	31 Aug 18	
7	Managerial	Request GAT for assistance in works planning and reporting	TDC Eng	31 Mar 17	Still to make the request.	28 Feb 18	
8	General	Prepare for the PIT Meeting in Uganda	C.A. & District Eng, Roads Committee	Sept 17	COMPLETE, attended meeting 20-23 Nov 17		Oct 17
9	Technical	Specify and request GPS receivers and dashboard camera	TDC	Apr 18	Requested, included in 2018 budget	31 Mar 18	
10	Technical	Conduct GEM road condition survey, 3 <sup>rd</sup> round and analyse	District & SLRA Eng	Oct 18	NEW		

## Annex 8 GEM Adviser Visit to Uganda and Zambia (Itinerary and People Met)

Day	Activity	Participants
Sun 18 Mar	Travel to Kampala	C. Bopoto
Mon 19 Mar	Working meetings/interactions with UNRA in Kampala: <ul style="list-style-type: none"> <li>Objectives of visit</li> <li>Review of Road Condition Assessment and Asset Valuation Results for 2017</li> <li>Review of AM Assessment Results for 2017</li> <li>Discussions on Prioritisation of Projects</li> <li>Updating of GEM Work Plan</li> </ul>	UNRA Staff, C. Bopoto
Tues 20 Mar	Travel to Jinja; working meeting at Jinja Station <ul style="list-style-type: none"> <li>Review of Road Condition Assessment and Asset Valuation Results for 2017</li> <li>Review of AM Assessment Results for 2017</li> <li>Site Visit</li> </ul>	UNRA Staff, C. Bopoto
Wed 21 Mar	Working meetings/interactions with Kamuli staff: <ul style="list-style-type: none"> <li>Objectives of visit</li> <li>Review of Road Condition Assessment and Asset Valuation Results for 2017</li> </ul>	Kamuli Staff, C. Bopoto
Thurs 22 Mar	Working meetings/interactions with Kamuli staff: <ul style="list-style-type: none"> <li>Review of AM Assessment Results for 2017</li> <li>Discussions on Prioritisation of Projects</li> <li>Updating of GEM Work Plan</li> </ul>	Kamuli, C. Bopoto
Fri 23 Mar am	Working meetings/interactions with Kamuli staff: <ul style="list-style-type: none"> <li>Discussions on Works Planning and Reporting</li> <li>Site Visit</li> </ul>	Kamuli, C. Bopoto
Fri 23 Mar pm	Travel to Kampala	C. Bopoto
Sat 24 Mar	Travel to Lusaka	C. Bopoto
Sun 25 Mar	Lusaka	C. Bopoto
Mon 26 Mar	Working meetings/interactions with Chongwe Staff: <ul style="list-style-type: none"> <li>Objectives of visit</li> <li>Review of Road Condition Assessment and Asset Valuation Results for 2017</li> </ul>	Chongwe Staff, C. Bopoto
Tues 26 Mar	Working meetings/interactions with Chongwe Staff: <ul style="list-style-type: none"> <li>Review of AM Assessment Results for 2017</li> <li>Discussions on Prioritisation of Projects</li> <li>Updating of GEM Work Plan</li> </ul>	Chongwe Staff, C. Bopoto
Wed 27 Mar	AFCAP, Zambia NRF RDA Meeting	C. Bopoto et al
Thurs 28 Mar	Travel to RSA	C. Bopoto

Name	Dept	Designation	Email address
Mark Rubarenzya	UNRA - HQ	Head, Research and Development	<a href="mailto:mark.Rubanrenzya@unra.go.ug">mark.Rubanrenzya@unra.go.ug</a>
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Rodgers Mugume	UNRA - HQ	Research Fellow	
Anatolie Byahurana	Jinja Station	Maintenance Technician	
Eng Patrick	Jinja Station	Engineer	

Name	Dept	Designation	Email address
Mulondo Grace	Kamuli District	Director of Engineering	Mulondo Grace
Mufumba Daniel	Kamuli District	Assistant Engineer	Mufumba Daniel
Mugeeze Charles	Kamuli District	Roads Inspector	Mugeeze Charles
Presley Chilonda	RDA-HQ	AFCAP Desk Officer	<a href="mailto:pchilonda@roads.gov.zm">pchilonda@roads.gov.zm</a>
	Chongwe Municipal Council	Sociologist	
Eng. Mushingi	Chongwe Municipal Council	Director of Works	
L. Mutambo	Chongwe Municipality Roads Department	Civil Engineer	<a href="mailto:mutambo.lazarus@gmail.com">mutambo.lazarus@gmail.com</a>

## Annex 9 Updated Action Plans – Uganda

### UGANDA - UNRA

No.	RAM Aspect		Action	Responsibility or Lead	Planned Completion Date	Status at Date: 20 Mar 2018	Revised Completion Timing
1	General	1.1	Nil				
		1.2	Nil				
		1.3	Nil				
2	External	2.1	Pertaining to UNRA's communication plan, advocate for emphasis on community consultation and involvement.	R&D	30 June 17	Ongoing. ED, PCA, DRIP, DRM and other directorates continuously engage political leaders, the business community, community residents, local leaders etc to sensitize about regulations, or in case of an emergency.	Continuous
		2.2	Recommend provision of a platform for coordination of road related issues at local government, district, regional and national levels.	R&D; Corporate Strategy	31 Aug 17	This platform has to be initiated by URF as they fund all road maintenance in the country. At the moment, there is a platform for the districts; and URF and UNRA have engagement, but no engagement yet involving both UNRA and the districts. While UNRA would welcome this platform, the dynamics for UNRA and districts are different. The UNRA station handles more km of road than the district yet they are allocated the same number of equipment.	
		2.3	Nil				
3	Institutional	3.1	Expedite and operationalize the AM Policy.	Legal Services.	31 Oct 17	Draft policy in line with corporate strategy still under review by directorate of Legal Services.	June 2018
		3.2	Review of LoS for Class C roads in consultation with stakeholders (road users, MoWT etc).	R&D; Network Planning and Maintenance.	June 18	MoWT Road Manual 2010. Most of the roads in our network are classified as C Gravel roads. Only 1 section- Kamuli- Bukungu- is classified as a B gravel road, according to daily traffic. Maximum speed designed for C and B gravel roads ranges between 40- 60kph and 50-80kph respectively	

No.	RAM Aspect		Action	Responsibility or Lead	Planned Completion Date	Status at Date: 20 Mar 2018	Revised Completion Timing
						depending on slope of the road. Also specifies the width of the carriage was as 4 and 5.6m respectively.	
		3.3	Review and expedite the drafting of an Emergency Response Plan with clear allocation of responsibilities at national, regional and station levels.	Maintenance	31 Oct 17	Not yet formulated.	
		3.4	Recommend establishment of a Road Asset Management Unit and identification of champions and enablers.	R&D + Network Planning	30 June 17	Network planning department handles the road asset management and investment planning aspects of the organization. This department continues to explore innovative ways for handling external factors that affect the prioritization of the organizations' work.	Dec 2017
		3.5	Nil				
4	Funding	4.1	Advocate exploration of alternative sources of funding for maintenance.	Corporate Strategy; Network Planning; R&D	31 Dec 17	Ongoing.	Dec 2018
		4.2	Prepare observations report and recommendations for empowering and building confidence in station managers to make informed and timeous decisions in utilization of funds.	R&D to Change Management; HR; Maintenance	31 Oct 17	Each station now has a member on the budget committee. An engagement with station committee members was held to sensitize about budgeting and utilization of funds. Regional engagements in draft plan for the next financial year.	Dec 2018
		4.3	Nil				
5	Managerial	5.1	Improve access to AM system components by all relevant staff to the level appropriate to function.	Network Planning; Change Management; IT	31 Dec 17	ROMARPS training for stations on hold due to limited funding.	31 Dec 17
		5.2	Operationalise existing manuals and procedures.	Maintenance	31 Dec 17	Guidelines and procedures existing from URF including annual published timelines for submission of work plans and weighting of priorities. Guidelines in use as they affect the agreed funding from URF for that financial year. <a href="http://www.roadfund.ug/wp-">http://www.roadfund.ug/wp-</a>	

No.	RAM Aspect		Action	Responsibility or Lead	Planned Completion Date	Status at Date: 20 Mar 2018	Revised Completion Timing
						<a href="#">content/uploads/2015/03/Budget-Guidelines-for-FY-2017-18.pdf</a>	
		5.3	Training for station managers in procurement procedures.	HR	31 Dec 17	Directorate of Procurement has a planned training program for stations for the coming financial year.	Dec 18
		5.4	Carry out 3 <sup>rd</sup> Round of GEM Road Condition Surveys.	R&D; Network Planning	30 Sept 18		
		5.5	Nil				
6	Technical	6.1	Build capacity at station level to implement AM procedures as set out in operational and technical guidelines.	HR; Network Planning	31 Dec 17	Network undertaking planning training in data collection procedures as part Aurecon's exercise; building the stations' capabilities.	31 Dec 17
		6.2	HQ to monitor personnel charged with collecting road condition data including validation of the output.	Network Planning; R&D	30 June 18	Ongoing, refer to 6.1 above  Network Planning staff supervise staff collecting condition data; upload and cleaning of data done by network planning department itself to ensure quality control of the data.	June 2018
		6.3	Nil				
7	Operations	7.1	Propose a review of procurement procedures to make process more efficient and timeous.	Procurement	31 Dec 17	Issue raised by most departments; R&D to make own observations known and present recommendations for review.	31 Dec 2018
		7.2	Nil				
8	Socio-economic evaluation	8.1	Evaluate 2 <sup>nd</sup> round data	GEM-GAT	30 June 18		
		8.2	Collect 3 <sup>rd</sup> round data for GEM projects	R&D; EHSS	30 Sept 18		
		8.2	Nil				

## UGANDA – KAMULI DISTRICT

No.	RAM Aspect		Action	Responsibility	Planned Completion Date	Status at Date: 23/03/17	Revised Completion Timing
1	General	1.1	Comment on Baseline Report	DE	07 April 2017	Complete	
		1.2	Prepare for T2 Meeting in Livingstone (8-10 May)	DE + Team	30 April 2017	Complete	
		1.3	Prepare for PIT Meeting in Nov. 2017		Oct 2017	Complete	
		1.4	Nil				
2	External	2.1	Develop a public consultation and communication plan	DE + Team + PR Dept	30 April 2017	Still ongoing	31 May 18
		2.2	Sensitise the Works Committee on Road Asset Management benefits etc	DE	30 June 2017	Complete	
		2.3	Nil				
3	Institutional	3.1	Draft mission statement for roads and the AM Policy and present to CAO for onward presentation and adoption by Council	DE + Team	30 April 2017	AM policy Ongoing	31 May 18
		3.2	Write to CAO/HR requesting filling the vacant posts	DE	30 April 2017	Request was made in July 2017, awaiting response	
		3.3	Request more training on Asset Management aspects	DE	15 May 2017	To Do	30 April 18
		3.4	Investigate available options for rapid road roughness surveys	DE	30 April 2017	To Do	31 May 18
		3.5	Finalise Level-of-Service definition and obtain buy-in by Council	DE	30 June 2017	To Do	31 May 18
		3.6	Nil				
4	Funding	4.1	Determine requirements – backlog maintenance	DE + Team	30 June 2017	Ongoing	31 Dec 18
		4.2	Request funds for road condition surveys, including purchasing road roughness measuring equipment	DE	30 Nov. 2017	Ongoing	31 Dec 18
		4.3	Calculate Network Asset Value using GEM Spreadsheet	DE + Team	30 July 2017	Completed, verifying second round data	31 March 18
		4.4	Assist Council and CAO to campaign for more funding and timely release by the Road Fund	DE	31 Dec. 2017	Ongoing	
		4.5	Nil				
5	Managerial	5.1	Request training in Whole Life Costing from AFCAP	DE	30 April 2017	To Do	31 Sept 18
		5.2	Nil				

No.	RAM Aspect		Action	Responsibility	Planned Completion Date	Status at Date: 23/03/17	Revised Completion Timing
6	Technical	6.1	Determine, document and justify needs for simple laboratory tests, indicate quantities of equipment and specs, write to CAO	DE + Team	30 June 2017	Request was submitted but funds are not yet available	31 Sept 18
		6.2	Request training assistance in Construction Management, Force Account Operations, etc from AFCAP, GIS systems and Mapping	DE	30 April 2017	Received some training in road maintenance and low-cost sealing from Mbale training centre	31 Sept 18
		6.3	Complete road condition data analysis, 1st round surveys	DE + Team	31 May 2017	Complete	
		6.4	Undertake 2nd round of Road Condition Surveys and analyse in preparation for PIT Meeting	DE + Team	30 Sept 2017	Complete	
		6.5	Nil				
7	Operations	7.1	Make equipment and workshop equipment needs known to CAO – number, specs, utilisation estimates	DE + Team	30 April 2017	We received new equipment namely; Grader, Wheel loader, 2 tippers, Water bowser and roller	
		7.2	Further develop maintenance planning and reporting instruments using templates provided under GEM	DE	30 April 2017	Continuous	
		7.3	Request information on best practices on technical audits of design and maintenance works, study	DE +Team	31 Dec. 2017	Ongoing	
		7.4	Nil				
8	Socio-economic evaluation	8.1	Undertake 2nd round of Social data collection and analysis in preparation for PIT meeting	DE+ Team	30 Sept 2017	Complete	
		8.2	Nil				

## Annex 10 GEM Maintenance Advisor Visit to Zambia – Itinerary and People Met

### Itinerary

Date	Meeting With	Time
19/03/18	RDA AFCAP Coordinator	9:30 – 10:00am
	RDA Road Maintenance Section	10:15 – 11:30
	Min of Local Govt	2:00 – 3: 00pm
	RDA/GEM Working session	3:15 – 4:45pm
20/03/18	District Visit to Chongwe, Director Of Works, Town Clerk & Mayor	10:00 – 1:00pm
	Working session, GEM, RDA & Director of works	2:00 – 300pm
21/03/18	Wrap up meeting	9:30 – 10:30
28/03/18	GEM Meeting with RDA, NRFA & MLG	10:00 – 12:30

### People Met

Thompson Banda	RDA	Senior Manager
Presley Chilonda	RDA	Principal Engineer
Changala Kanchule	MLG	Senior Engineer
Kapeso Shikabonga,	CMC	Socio Economic Planner
Mino Musondo	CMC	Ass. Public Relations Officer
Mutambo Lazarous	CMC	Civil Engineer
Fanizani Phiri Banda	MLG	Deputy Director Infrastructure
Geoffrey Chumbwe	CMC	Town Mayor

## Annex 11 Updated Action Plan for Chongwe Municipality

No.	RAM Aspect	Action	Responsibility	Planned Completion Date	Status to Date:	Remarks
1	Maintenance Funding	<ul style="list-style-type: none"> <li>Request for maintenance funds to commence the maintenance works on the project roads and other roads by beginning of March 2018</li> </ul>	<ul style="list-style-type: none"> <li>DES, DF</li> </ul>	<ul style="list-style-type: none"> <li>30 June 2018</li> </ul>	<ul style="list-style-type: none"> <li>A budget has been prepared and will be submitted to Ministry of Local Government</li> </ul>	Some maintenance works are on-going using constituency development funds.
2	Road Condition Data Analysis	<ul style="list-style-type: none"> <li>Undertake road and structure data analysis and prepare a prioritised road maintenance plan including quantifying backlog maintenance</li> </ul>	<ul style="list-style-type: none"> <li>DES</li> </ul>	<ul style="list-style-type: none"> <li>30 August 2018</li> </ul>	<ul style="list-style-type: none"> <li>In Progress</li> </ul>	This is still a learning process
3	Follow-up Road Condition Surveys and Data Analysis	<ul style="list-style-type: none"> <li>Carry out follow up road condition surveys and analyse the data, include entire network</li> </ul>	<ul style="list-style-type: none"> <li>DES, RDA</li> </ul>	<ul style="list-style-type: none"> <li>30 Sept 2018</li> </ul>	<ul style="list-style-type: none"> <li>Still to start, this activity may start earlier than the planned date</li> </ul>	
4	Formulation of Asset Management Policy	<ul style="list-style-type: none"> <li>Complete drafting the AM Policy</li> </ul>	<ul style="list-style-type: none"> <li>DES, RDA RO</li> </ul>	<ul style="list-style-type: none"> <li>30 June 2018</li> </ul>	<ul style="list-style-type: none"> <li>A draft AM Policy was prepared</li> <li>The policy is awaiting approval and adoption by the council</li> </ul>	
5	Formulation and document an Emergency Response plan	<ul style="list-style-type: none"> <li>Prepare the emergency response plan for presentation to management and request for its approval</li> </ul>	<ul style="list-style-type: none"> <li>DES</li> </ul>	<ul style="list-style-type: none"> <li>30 June 2018</li> </ul>	<ul style="list-style-type: none"> <li>Preparation is in progress</li> </ul>	
6	Capacity Building	<ul style="list-style-type: none"> <li>Write motivation to AFCAP for training support in asset management</li> </ul>	<ul style="list-style-type: none"> <li>RDA RO/CDC</li> </ul>	<ul style="list-style-type: none"> <li>30 May 2018</li> </ul>	<ul style="list-style-type: none"> <li>Motivation was prepared last year but it was not approved. A resubmission will be made for approval by National AFCAP Coordinator</li> </ul>	
7	Asset management system	<ul style="list-style-type: none"> <li>Incorporate GIS referencing system in data collection</li> <li>Develop an excel road based inventory for documentation of data</li> </ul>	<ul style="list-style-type: none"> <li>RDA RO/CMC</li> <li>RDA RO/CMC</li> </ul>	<ul style="list-style-type: none"> <li>On-going</li> <li>On-going</li> </ul>	<ul style="list-style-type: none"> <li>GIS referencing system was adopted in the data collection method</li> <li>An excel road based inventory was developed</li> </ul>	
8	Maintenance Operations	<ul style="list-style-type: none"> <li>Engage ZNS, RDA and NRFA for assistance in maintenance roads in Chongwe</li> <li>Commence the Road maintenance works.</li> </ul>	<ul style="list-style-type: none"> <li>DES</li> <li>CDC</li> </ul>	<ul style="list-style-type: none"> <li>June 2018</li> <li>31 Mar 2018</li> </ul>	<ul style="list-style-type: none"> <li>Submit fund requests and write request for assistance to the RDA and ZNS</li> </ul>	This process is on-going

No.	RAM Aspect	Action	Responsibility	Planned Completion Date	Status to Date:	Remarks
					• Pending awaiting funds	
9	Socio-economic data Collection.	<ul style="list-style-type: none"> <li>• Carry out monitoring surveys and analysis</li> </ul>	<ul style="list-style-type: none"> <li>• DES</li> <li>• DES/DDP</li> </ul>	<ul style="list-style-type: none"> <li>• On-going</li> </ul>		
10	Prepare for PIT Meeting in Nov 2018	<ul style="list-style-type: none"> <li>• Prepare presentation on status of GEM project</li> </ul>	<ul style="list-style-type: none"> <li>• DES/RDA</li> </ul>	<ul style="list-style-type: none"> <li>• 31 Oct 2018</li> </ul>		
11	Enhancement of Communications to stakeholders	<ul style="list-style-type: none"> <li>• Prepare project material for dissemination to stakeholders</li> <li>• Conduct media campaign and public meetings</li> </ul>	<ul style="list-style-type: none"> <li>• DES, RDA RO</li> </ul>	<ul style="list-style-type: none"> <li>• 30 June 2018</li> </ul>	<ul style="list-style-type: none"> <li>• Submit budget for communication campaigns and public meetings for funding</li> </ul>	

## **Annex 12 Self-assessment questionnaires and road condition data for each of the project areas**

See separate PDF file.

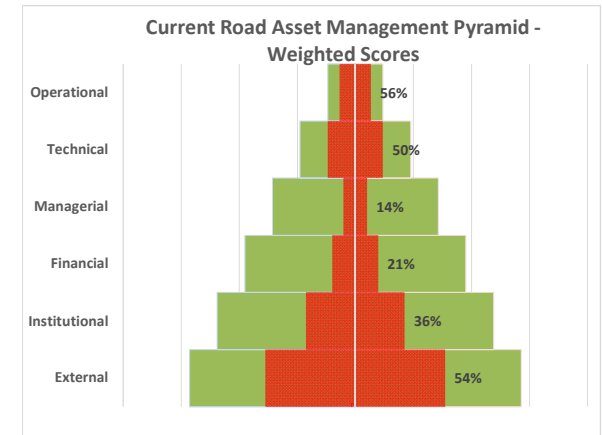
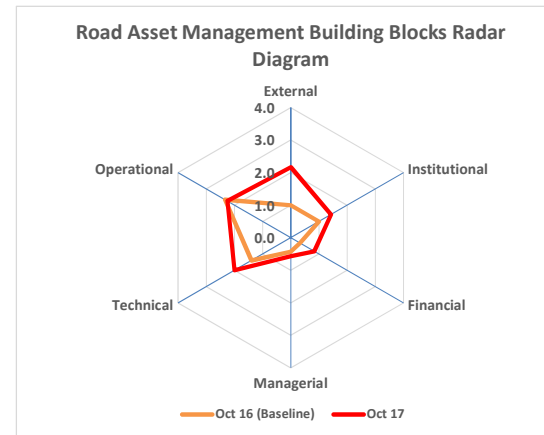
**AFCAP GEM - RURAL ROAD SECTOR SUSTAINABILITY ASSESSMENT (NOV 2017): ZAMBIA - Chongwe District Municipality**

Building Block	#	Item Assessed	Oct 16 (Baseline)	Oct 17
External	1.1	National policy for rural roads		3
	1.2	Existence of rural road maintenance strategy		0
	1.3	Stakeholder consultation	0	3
	1.4	Tabling of budgets		4
	1.5	Reporting back to stakeholders		1
	1.6	Involvement in programmes at local level	2	2
Institutional	2.1	AM policy development	2	2
	2.2	Level of service - existence	0	0
	2.3	Level of service - use	0	1
	2.4	Emergency response plan	2	2
	2.5	Staff roles and responsibilities	1	3
	2.6	Staff training and capacity building	1	1
	2.7	Staff salaries	1	1
Financial	3.1	Provision of road maintenance funding	0	1
	3.2	Budget funding against perceived need	0	1
	3.3	Asset valuation	1	1
	3.4	Budget funding - asset value	0	0
	3.5	Financial forecasting	0	0
	3.6	Accounting system	1	2
Managerial	4.1	AM system	0	0
	4.2	Maintenance intervention levels	0	0
	4.3	Maintenance plans - existence	1	1
	4.4	Maintenance plans - methods used	1	2
	4.5	Maintenance backlog	0	0
	4.6	Traffic forecasting	0	0
	4.7	Capital expenditure - basis for	1	1
Technical	5.1	Road referencing system - existence	1	2
	5.2	Road inventory - existence	2	2
	5.3	Road inventory data	2	3
	5.4	Road condition assessment	2	2
	5.5	Asset utilisation	0	1
Operational	6.1	Service delivery mechanisms	3	3
	6.2	Maintenance planning	4	4
	6.3	Reporting		1
	6.4	Auditing	0	1

Assessment Scoring Criteria:	
< 0	Very Poor
0-1	Poor
1-2	Fair
2-3	Good
3-4	Very Good

Weighting Ranking	Building Block	Max. Possible Score	Oct 16 (Baseline)	Oct 17	Weighting
1	External	4	1.0	2.2	0.29
2	Institutional	4	1.0	1.4	0.24
3	Financial	4	0.3	0.8	0.19
4	Managerial	4	0.4	0.6	0.14
5	Technical	4	1.4	2.0	0.10
6	Operational	4	2.3	2.3	0.05
<b>Road Sector Sustainability Assessment Score</b>			<b>0.9</b>	<b>1.5</b>	
<b>Road Sector Sustainability Rating</b>			<b>Poor</b>	<b>Fair</b>	
<b>Road Sector Sustainability Index (RSSI)</b>			<b>0.22</b>	<b>0.37</b>	

(Scale: 0 - 1)



**AFCAP GEM - RURAL ROAD SECTOR SUSTAINABILITY ASSESSMENT (NOV 2017): ZAMBIA -****Chongwe District Municipality****BUILDING BLOCK 1: EXTERNAL**

Key objective:	Facilitate delivery of a broad range of benefits to rural communities through effective interaction with external stakeholders.
Element:	AM policy and strategy
Issue:	The existence of an AM policy that is: <ul style="list-style-type: none"> <li>• Relevant to the rural transport sector;</li> <li>• Supported by senior decision makers;</li> <li>• Adopted at the highest level in government.</li> </ul>
Element:	Stakeholder engagement
Issue:	Engagement with stakeholders by means of informed consultations and a culture of open communications and knowledge sharing in order to: <ul style="list-style-type: none"> <li>• Understand their needs and expectations by helping to identify local requirements, alternatives and solutions to problems;</li> <li>• Lobby political support for adequate AM plans and related maintenance funding;</li> <li>• Influence the development of the district's AM strategies;</li> <li>• Communicate the district's programmes and targets;</li> <li>• Assess how the district's performance is rated by stakeholders.</li> </ul>

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
1.1 (a)	Is there a national policy for rural roads which has been adopted by the central government?	YES				1	
1.1 (b)	Does the national policy define the roles and responsibilities of the agencies responsible for managing rural roads?	YES				1	
1.1 (c)	Does the national policy identify funding sources that are adequate for maintenance of the rural road network?	NO			0		3
1.1 (d)	Does the national policy define stakeholder groups to be consulted in the management of rural roads?	YES				1	
1.2 (a)	Is there a national policy for maintenance of rural roads?	NO					
1.2 (b)	Does the rural roads maintenance policy require the development of a strategy for undertaking sustainable rural road maintenance?	NO					
1.2 (c)	Does the rural roads maintenance strategy ensure that rural road improvement is linked to a simultaneous commitment to the annual maintenance costs?	NO			0		0
1.2 (d)	Does the rural roads maintenance strategy require the rural road agencies to minimise the total costs of ownership by adopting whole-life approaches (leading to optimum balance between capital and recurrent budgets)?	NO					
1.3 (a)	Does the district generally communicate with road users, local inhabitants and local businesses/stakeholders?	YES	Through the District Development Coordinating Committee.	1		1	
1.3 (b)	Does the district conduct consultations with members of the public (road users, local inhabitants and local businesses) at least annually?	YES	Through the District Development Coordinating Committee and Community	1		1	
1.3 (c)	Does the district use a range of techniques to communicate with stakeholders e.g. surveys, public notices, community radio, media releases, newsletters, telephone hotlines and social media?	YES	Through public notices and community radio station		2	1	3

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
1.3 (d)	Does the district have developed strategies and guidelines for community consultation and information dissemination?	NO	Through community leaders and interest groups				
1.4 (a)	Does the district actively seek participation of stakeholders and road users in the preparation of strategic plans, programmes and budgets for road works?	YES	Budgets are drawn by the budgets committee. Consultation is done through community leaders and interest groups			1	4
1.4 (b)	Does the district discuss its strategic plans at council meetings to map out plans for short, medium and long-term road works programmes?	YES	The current strategic plan is under review because of change of district to municipality.		0	1	
1.4 (c)	Does the district coordinate inter-sectoral district road development programmes through established council structures?	YES	The district now coordinates Multi-sectoral Planning through its established council structures			1	
1.4 (d)	Does the district table road works budgets at council meetings for approval before implementing works?	YES	This is the requirement of the Ministry that the Budget be tabled at committees and full council before approval.			1	
1.5 (a)	Does the district table periodic road works roadworks acquittal reports at council meetings for approval?	YES	At committee meetings and full council			1	1
1.5 (b)	Does the district maintain a public display of road works acquittal reports for accessing by the public?	NO	No public displays are made. But the general public is free to access the information through official request		0		
1.6 (a)	Does the district participate in programmes at provincial/regional and national level and through established council structures?	YES	It participates in the provincial development coordinating committee meetings			1	2
1.6 (b)	Does the district actively communicate with the local government ministry, the national roads authority and the Road Fund through established structures on road preservation matters?	YES	The district communicate road matters through the parent ministry of local government and actively participate in road matters with RDA and Road Fund agency.		0	1	

**BUILDING BLOCK 2: INSTITUTIONAL**

Key objective: Successful implementation of road asset preservation practice through support of the district executives, an adequate organisational structure, adequate number of trained staff.

Element: AM policy and strategy

Issue:

- ☐ The existence of an AM policy and strategy that is supported by senior leadership;
- ☐ Need to recruit and retain capable staff by offering competitive salaries;
- ☐ An appropriate organisational structure with an adequate complement of appropriately trained staff with the necessary core competencies;
- ☐ The extent to which staff involved in the process understand and support it and are willing to contribute and improve it;
- ☐ KPIs that can be used to measure the quality of the service the agency provides;
- ☐ Means (funding) for outsourcing of all strategic, non-core activities (e.g. instrumented surveys such as roughness and deflection measurements).

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
2.1 (a)	Does the district have a corporate vision and mission statement?	YES		1		1	
2.1 (b)	Does the district's mission statement consider stakeholder needs and expectations?	YES	The stakeholders needs are part and parcel of the decision making process and monitoring of road projects	1	2	1	2
2.2(a)	Have the basic levels of service for roads been defined?	NO	Service levels have not been defined				
2.2 (b)	Are stakeholders consulted when determining the levels of service?	NO	Defined Levels of service do not exist but stakeholders will be consulted when the district decide to determine the service levels		0		0
2.3 (a)	Is the contribution of the road network (asset value) to the district understood?	YES	The asset value is not known but the contribution of the network is understood.	1		1	
2.3 (b)	Is the cost to fulfil the level of service requirements known?	NO	No level of service exist but the cost of required maintenance is known		1		1
		NO					
2.4 (a)	Are emergency responses understood by key members of staff?	YES	No official response plan exists but members of staff understand the procedures in case of an emergency	1		1	
2.4 (b)	Does the district have a formal emergency response plan?	NO	All emergencies are addressed through the District disaster preparedness committee chaired by the District Commissioner (DC). The Council has developed an emergency response plan but it is not yet approved and adopted		1		2
2.4 (c)	Is the safety of infrastructure routinely assessed?	NO					
2.4 (d)	Are formal debriefs given to staff after severe damage to infrastructure as a result of a traffic accident (e.g. bridge strike) or climate induced event (e.g. washout)?	YES	Reports are compiled and distributed to staff.			1	
2.5 (a)	Does the district's organisational structure identify roles, responsibilities and competencies of key staff, aligned with its AM policy, strategies, objectives and plans?	YES	Organogram and job descriptions exist. AM Policy has not been officially adopted.	1		1	
2.5 (b)	Are the roles, responsibilities and organisational commitment for AM documented and communicated to all relevant people (job descriptions)?	YES	Responsibility and roles are communicated. AM Policy has not been officially adopted.			1	
					1		2

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
2.5 (c)	Does the district have an adequate complement of appropriately qualified staff with designated responsibilities to undertake its AM mandate?	YES	All positions have been filled now		1	1	2
2.5 (d)	Is the district able to outsource its non-core activities (e.g. instrumented surveys such as roughness and deflections)?	NO	This is done through Ministry of Local Government (HQs) as Cost of engaging would be beyond Council threshold				
2.6 (a)	Does the district receive/offer training opportunities for staff?	YES	Through the ministry and other co-operating partners. E.g. European union	1		1	
2.6 (b)	Does AM specific training occur for primary staff?	NO	There is no specific training but training occur sometimes through projects like AfCAP project				
2.6 (c)	Does the district implement an on-going training programme to address required AM competencies?	NO	There is no specific training but training occur sometimes through projects like AfCAP project		1		1
2.6 (d)	Is there a formal AM capacity building programme which is routinely monitored?	NO	There is no specific training but training occur sometimes through projects like AfCAP project				
2.7 (a)	Are district engineer salaries less than 50% of comparable private sector positions?	YES	10 - 25% lower	1		1	
2.7 (b)	Are district engineer salaries 50-80% of comparable private sector positions?	NO	Private sector salaries are higher		1		1
2.7 (c)	Are district engineer salaries roughly the same as comparable private sector positions?	NO	Not the same, private sector salary is higher				
2.7 (d)	Are district engineer salaries greater than comparable private sector positions?	NO	Private sector is higher				

**BUILDING BLOCK 3: FINANCIAL**

Key objective: The achieve stable, adequate and sustainable funding for maintenance.  
 Element: Financial arrangements  
 Issue:

- A stable, adequate and sustainable source(s) of funding for maintenance;
- Annual asset valuation of road infrastructure assets;
- Costing framework for determining unit costs of works;
- Budgeting and programming processes;
- Prioritised maintenance investment plan;
- Risk strategy to address potential consequences of inadequate funding (e.g. emergency response);
- Financial accounting and auditing of expenditure.

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
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**Economic Growth through Effective Road Asset Management**

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
3.1 (a)	Does the district depend only on the consolidated fund (own funds) for road maintenance?	NO	The council raises its local revenue through rates, levies and taxes and a portion of that revenue is put to road maintenance. A big portion comes from road fund through Ministry of Local Government.			1	
3.1 (b)	Is the funding received from the consolidated fund related to road asset condition and performance?	NO	In most cases the amount received does not reflect the actual Funds required to address the existing poor condition. Funds received are usually not enough for all the works.		0		1
3.1 (c)	Does the district get a fixed share of its maintenance funding requirement from a Road Fund and/or central government?	NO	Adjustments are done during review of the budget and usually the allocated funds annually do not match the required intervention and the amounts change every year.				
3.1 (d)	Does the district get a variable share of its maintenance funding requirement from the Road Fund that is related to road asset condition and performance?	NO	But in most cases the final budget does not reflect the actual Funds required to address the existing poor condition. Funds received are usually not enough for all the works.				
3.2 (a)	Is the percentage of the budgeted funding obtained < 30 % of that required?	YES	Disbursement of funds is irregular and done as and when funds are available upon request which also take long to be approved.			1	
3.2 (b)	Is the percentage of the budgeted funding obtained 30%-59% of that required?	NO	Not in this range, due to financial constraints		0		1
3.2 (c)	Is the percentage of the budgeted funding obtained 60% - 89% of that required?	NO	Not in this range, due to financial constraints				
3.2 (d)	Is the percentage of the budgeted funding obtained 90% - 100% of that required?	NO	Not in this range, due to financial constraints				
3.3 (a)	Does the district carry out asset valuation?	YES	This is only starting the AfCAP project			1	
3.3 (b)	Where the district carries out asset valuation, is the value of the district's road asset decreasing?	YES	No Asset Valuation has been done but the decrease in asset value is observed by lack of maintenance of the road network in the district and poor road condition.	1			
3.3 (c)	Where the district carries out asset valuation, is the value of the district's road asset stable?	NO	No Asset Valuation has been done but the decrease in asset value is observed by lack of maintenance of the road network in the district and poor road condition.		1		1

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
3.3 (d)	Where the district carries out asset valuation, is the value of the district's road asset increasing?	NO	No Asset Valuation has been done but the decrease in asset value is observed by lack of maintenance of the road network in the district and poor road condition.				
3.4(A)	Is the percentage of the maintenance funding obtained $\geq 0.1\%$ of the asset value of the road network?						
3.4 (b)	Is the percentage of the maintenance funding obtained $\geq 0.5\%$ of the asset value of the road network?	NO	No Asset Valuation has been done so the percentage is not known but apparently the				
3.4 (c)	Is the percentage of the maintenance funding obtained $\geq 1\%$ of the asset value of the road network?	NO	No Asset Valuation has been done so the percentage is not known but apparently the		0		0
3.4 (d)	Is the percentage of the maintenance funding obtained $\geq 1.5\%$ of the asset value of the road network?	NO	No Asset Valuation has been done so the percentage is not known but apparently the funds are not enough				
3.5 (a)	Does the district carry out annual and multi-annual financial forecasting for maintenance works?	NO	Department does it through budgeting committee		0		0
3.5 (b)	Are the financial forecasts for maintenance works based on current Asset Management Plan (AMP) outputs?	NO	Asset management plan is still being developed				
3.6 (a)	Does the district operate an accounting system?	YES	It is using DOVE accounting system	1		1	
3.6 (b)	Are the accounts audited annually?	YES	By the office of the auditor general and also the auditor from the ministry of local government		1	1	2
3.6 (c)	Are the accounts published annually?	NO	The accounts details are only shared in council meetings and not in the public media				
3.6(d)							

**BUILDING BLOCK 4: MANAGERIAL**

**Economic Growth through Effective Road Asset Management**

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
<p>Key objective: Successful implementation of road asset preservation practice through support of the district executives, an adequate organisational structure, adequate number of trained staff</p> <p>Element: Network management</p> <p>Issue:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Use of appropriate AM system that contains: <ul style="list-style-type: none"> <li><input type="checkbox"/> Network definition (road and bridge inventory information),</li> <li><input type="checkbox"/> Network condition (roads and bridges)</li> <li><input type="checkbox"/> Network usage (traffic)</li> <li><input type="checkbox"/> Financial/cost information on works activities</li> <li><input type="checkbox"/> Storage, update, analysis and reporting of data collected</li> </ul> </li> <li><input checked="" type="checkbox"/> Appropriate levels of service and intervention standards that determine gaps in network performance?</li> <li><input checked="" type="checkbox"/> Prioritised annual, medium (3- 5yrs) and long term (&gt; 5 yrs) maintenance and development plans and related investment plans?</li> <li><input checked="" type="checkbox"/> A risk management strategy (for unfunded works);</li> <li><input checked="" type="checkbox"/> Annual reporting on the overall management of the road asset (AM plan);</li> <li><input checked="" type="checkbox"/> Demand forecasting.</li> </ul>							
ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
4.1 (a)	Does the district have an AM system(s) in place which can store current and historical asset inventory, condition and asset utilization data (e.g. traffic)?	NO	The district has no Asset Management System		0		0
4.1 (b)	Does the AM system enable road treatment cost and historical maintenance information to be stored and accessed?	NO	The district has no Asset Management System				
4.1 (c)	Does the AM system allow for the comparison of the current condition of road assets with intervention levels to determine maintenance requirements?	NO	The district has no Asset Management System				
4.1 (d)	Can the AM system facilitate the prioritisation of road sections requiring maintenance?	NO	The district has no Asset Management System				
4.2 (a)	Has the district developed intervention levels for all its principal asset types which require periodic maintenance (carriageway, bridges, and culverts)?	NO	Intervention levels not yet developed		0		0
4.2 (b)	Are the intervention levels directly associated with defined levels of service?	NO	Level of service not yet determined				
4.2 (c)	Have the intervention levels been determined using an economic analysis?	NO	This has not yet been considered. Intervention levels are mainly determined based on observation and visual inspections and political directives				
4.2 (d)	Have the intervention levels been determined using socio-economic-political (i.e. multi-criteria) analysis?	NO	This has not yet been considered. Intervention levels are mainly determined based on observation and visual inspections and political directives				
4.3 (a)	Does the district produce annual maintenance and development plans?	YES	Plans are usually not followed because funds are not received as planned/expected	1		1	

**Economic Growth through Effective Road Asset Management**

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
4.3 (b)	Does the district produce annual prioritised maintenance and development plans?	NO			1		1
4.3 (c)	Does the district provide prioritised medium term (3-5 year) maintenance plans?	NO	No medium term plans are prepared by the district				
4.3 (d)							
4.4 (a)	Does the district keep records of maintenance and development work activities?	YES	The district keeps the maintenance and developmental records only storage proves to be a challenge	1		1	
4.4 (b)	Is maintenance and development prioritised according to asset condition?	YES	But in most cases prioritisation is based on political directives and availability of funds		1	1	2
4.4 (c)	Is maintenance and development prioritised using a cost benefit approach?	NO	Mostly it is based on the urgency and sometimes due to political directives				
4.4 (d)	Is maintenance and development expenditure prioritised using techniques which consider economic and social benefit?	NO	Economic and social benefit are considered				
4.5 (a)	Does the district keep a record of maintenance works backlog?	NO	Maintenance backlogs are kept. Recording keeping is a	0			
4.5 (b)	Does the district have a strategy to reduce maintenance backlog based on a percentage of the available development budget?	NO	By using its local resources to carry out the works		0		0
4.5 (c)	Does the district prioritise the reduction of maintenance backlog using an economic analysis?	NO	Does not prioritise using economic analysis				
4.5 (d)	Does the district prioritise the reduction of maintenance backlog using risk management techniques?	NO	No risk management techniques are used				
4.6 (a)	Does the district carry out basic demand (traffic) forecasting?	NO	No traffic forecasting demands are done. The				
4.6 (b)	Are the forecasts of traffic demand based on traffic counts carried out in the last 5 years using robust economic indicators (e.g. GDP)?	NO	No traffic forecasting demands are done. The district relies on the road		0		0
4.7 (a)	Does the district schedule capital projects using staff judgement, taking into consideration government policy and political drivers?	YES	Takes into consideration stakeholders concerns, staff judgement, government	1		1	
4.7 (b)	Are projects identified using input from operational staff, estimates of service lives, traffic demand	NO	Identification is usually done through reports from				
4.7 (c)	Are major capital projects for the next 10 years identified and prioritised taking into account socio-political-economic requirements?	NO	This happens at national level		1		1
4.7 (d)	Does the district use advanced formalised socio-economic-political decision-making techniques to identify major capital expenditure?	NO	Uses simple decision making techniques				

**BUILDING BLOCK 5: TECHNICAL**

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
<p>Key objective: Identification and description of road assets including inventory, condition data and performance monitoring; and availability of data to network managers.</p> <p>Element: Road network database</p> <p>Issue:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Existence of a road referencing system;</li> <li><input type="checkbox"/> Existence of a classified road inventory;</li> <li><input type="checkbox"/> Standard procedures for developing a road inventory, data collection and performance monitoring;</li> <li><input type="checkbox"/> Use of asset register to store all road asset information.</li> </ul>							
ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
5.1 (a)	Does the district have a road referencing system based on routes and nodes between centres of population?	YES	It has been developed by AfCAP, that's what the district is using.	1	1	1	2
5.1 (b)	Is the road referencing system based on road sections (< 5 km) with homogeneous characteristics?	YES				1	
5.1 (c)	Is the road referencing system based on sub-sections (homogenous sections of 200 m lengths)?	NO	It's based on 5km sections.				
5.1 (d)	Is the road referencing system GIS based?	NO	The system of recording start and end coordinates is just being incorporated in the survey system.				
5.2 (a)	Does the district have an item inventory recording basic road surface types (earth, gravel or sealed)?	YES	The inventory is there for all the roads	1	2	1	2
5.2 (b)	Does the district undertake an inventory of all principal assets (carriageway, shoulders, bridges, culverts, side drains)?	YES	The exercise is not done regularly due to limited resources	1		1	
5.2 (c)	Does the inventory include the service levels of all principal assets?	NO	Service levels have not yet been determined				
5.2 (d)	Does the district have deterioration models for all principal assets?	NO	The district doesn't have a current deterioration model in place				
5.3 (a)	Is the road inventory based on assumptions or incomplete data?	NO	It is based on the physical inspection done on the roads.	1	2		3
5.3 (b)	Is there a system of systematic and documented data collection for all principal assets (carriageway, shoulders, bridges, culverts, side drains) on a road by road basis?	YES	The district had no proper data collection system but now the district is using data collection tools developed under the AfCAP project to collect data.	1		1	
5.3 (c)	Is there an established system of systematic and documented data collection for all principal assets (carriageway, shoulders, bridges, culverts, side drains) on a section basis?	YES	The district had no proper data collection system but now the district is using data collection tools developed under the AfCAP project to collect data.			1	

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
5.3 (d)	Is there an established system of systematic and documented data collection for all principal assets on a sub-section basis?	YES	The district had no proper data collection system but now the district is using data collection tools developed under the AfCAP project to collect data.			1	
5.4 (a)	Does the district carry out annual visual condition assessment surveys for carriageways, shoulders of gravel and earth roads?	YES	Annual surveys are conducted on the carriageways. The exercise is not conducted consistently due to lack of funds	1		1	
5.4 (b)	Are the visual condition assessments of gravel and earth roads carried out in accordance with well documented, standardised procedures?	YES	Documented procedures introduced during the AfCAP project are being followed	1		1	
5.4 (c)	Does the district measure gravel loss annually?	NO	This was not being done before but through data collection tools developed under AfCAP project the district has started to record gravel loss		2		2
5.4 (d)	Are the results of the road condition assessment and other road recorded in a computerised AM system?	NO	The district has no AM System.				
5.5 (a)	Does the district estimate asset utilization (traffic) on its network?	NO	Traffic utilisation on the network is not known				
5.5 (b)	Does the district measure asset utilization (traffic) annually on its major roads?	NO	Measurements are not done				
5.5 (c)	Does the district forecast asset utilization across its network from annual measures of utilization of a sampled number of roads?	NO	District doesn't have the standardised procedures for estimating asset utilization		0		1
5.5 (d)	Does the district assess bottlenecks on its network?	YES	Assessments are done on the network			1	

**BUILDING BLOCK 6: OPERATIONAL**

Key objective: Efficient operations at district level including planning and scheduling of maintenance, procurement of service providers and technical compliance.

Element: Procurement of services

Issue:

- Appropriate type of contract;
- Outsourcing of strategic, non-core activities;
- Maintenance scheduling of works;
- Auditing of maintenance works.

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
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**Economic Growth through Effective Road Asset Management**

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
6.1 (a)	Are service delivery roles within the district council clearly allocated?	YES	The service delivery roles within the district council are Clearly allocated through job descriptions and council standard procedures	1	3	1	3
6.1 (b)	Does the council have provision for outsourcing of non-core activities?	YES	Done through the parent ministry (Ministry of Local Government)	1		1	
6.1 (c)	Are competitive tendering practices used?	YES	Open tender process (tenders	1		1	
6.1 (d)	Are service delivery mechanisms reviewed annually to identify risks, benefits and costs of various outsourcing options?	NO	Not reviewed, only do so when need arises				
6.2 (a)	Does the district plan day to day maintenance activities?	YES	Plans are usually not followed due to political directives and financial challenges	1	4	1	4
6.2 (b)	Are the needs of stakeholders considered when scheduling day to day maintenance?	YES	Their needs are taken into consideration	1		1	
6.2 ©	Is the planning of day to day maintenance optimised in terms of the availability and use of resources?	YES	Based on the availability of resources and the urgency of the work	1		1	
6.2 (d)	Is day to day planning of maintenance optimised by considering the availability of resources and impacts on road users?	YES	Mainly base on the availability of resources and also the impacts to road users	1		1	
6.3 (a)	Does the district prepare day to day reports on road maintenance activities?	NO	Not done		0		1
6.3 (b)	Does the district prepare weekly reports on road maintenance activities?	YES	Reports are prepared			1	
6.4 (a)	Does the district undertake technical audits of designs?	NO	The technical audits are done at provincial level		0		1
6.4 (b)	Does the district regularly undertake technical audits of maintenance, construction and rehabilitation works?	NO	The audits are done at provincial level				
6.4 (c)	Does the district provide guidelines for undertaking the road audits?	NO	District doesn't provide guidelines for undertaking the road audits because no audits are done at district level				
6.4 (d)	Does the district require service suppliers to be ISO 9000 certified?	YES	They need to meet the ISO standards			1	

## AFCAP GEM - RURAL ROAD SECTOR SUSTAINABILITY ASSESSMENT (NOV 2017): ZAMBIA - Chongwe District

## Municipality

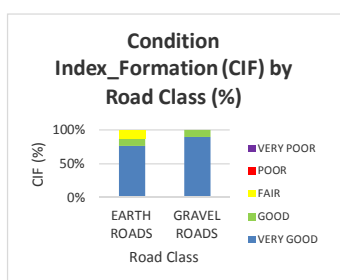
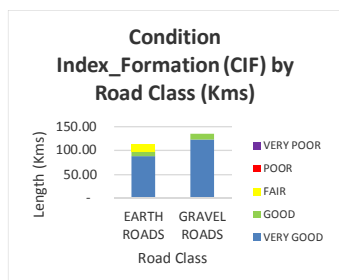
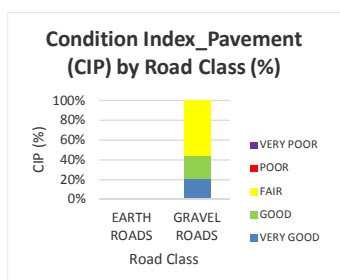
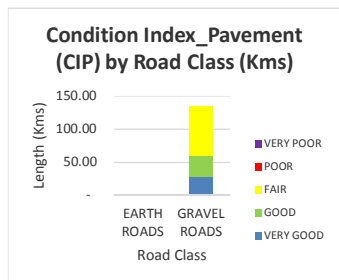
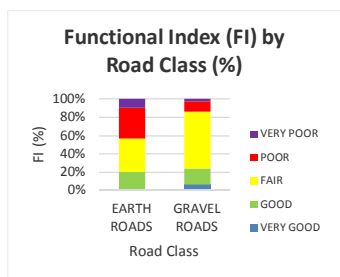
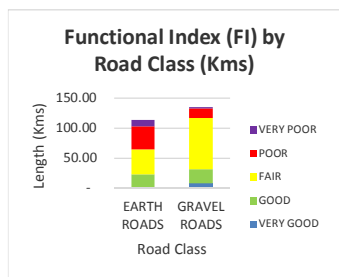
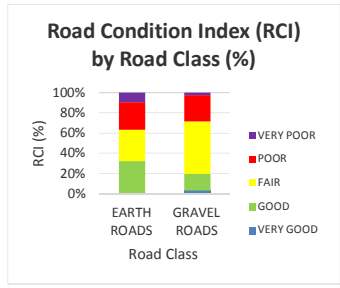
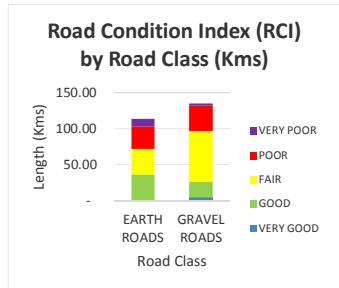
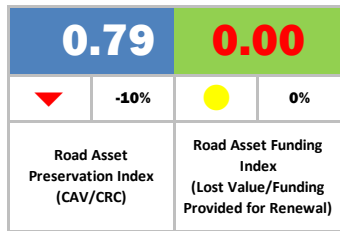
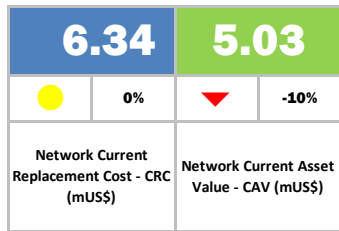
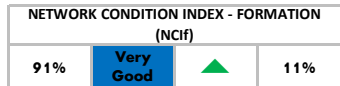
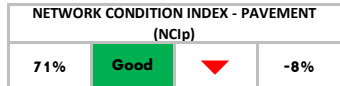
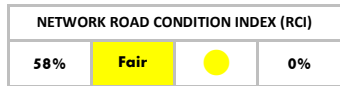
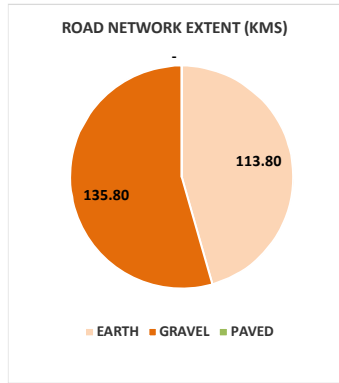
## MEASURABLE DATA

Building Block	Data Item	Unit	Benchmark	2016	Jan 2017 (Baseline)	Oct-17
External	Stakeholder communication tools available	No.	3	2	2	2
	Meetings with stakeholders - pre budget	No.	2	1	1	1
	Council meetings - strategy	No.	4	1	1	1
	Council meetings - budget approval	No.	2	2	0	0
	Meetings with stakeholders - post budget	No.	1	1	0	0
Institutional	Total establishment - engineers + technicians	No.	5	4	4	4
	Vacancies - engineers + technicians	No.	1	2	2	2
	Planned training programmes	No.	2	0	0	0
	Training courses undertaken	No.	2	2	0	0
	DE salary as % of private sector	%	85	65%	75%	75%
Financial	Estimated project road network asset value	mUS\$		not known	23.5	23.5
	Total requirements - routine maintenance	mUS\$		not known	not known	not known
	Total requirements - periodic maintenance	mUS\$		not known	not known	not known
	Total requirements - rehabilitation/reconstruction	mUS\$		not known	not known	not known
	Total requirements - development	mUS\$		not known	not known	not known
	Budget - routine maintenance	mUS\$		not known	not known	not known
	Budget - periodic maintenance	mUS\$		not known	not known	not known
	Budget - rehabilitation/reconstruction	mUS\$		not known	not known	not known
	Budget - development	mUS\$		not known	not known	not known
	Funding - Road fund	mUS\$	0.500	0.100	0.112	0.112
	Funding - Council funds	mUS\$	0.150	0.095	0.120	0.120
	Funding - Donors	mUS\$		not known	not known	not known
	Funding - Others	mUS\$		not known	not known	not known
Managerial	Cost of asset management system	US\$		not known	not known	not known
	Annual maintenance cost of AM system	US\$		not known	not known	not known
	Network under routine maintenance	Kms		not known	not known	not known
	Network under routine maintenance as % of total	%		not known	not known	not known
	Network under periodic maintenance	Kms		not known	not known	not known
	Network under periodic maintenance as % of total	%		not known	not known	not known
	Network under rehabilitation	Kms		not known	not known	not known
	Network under rehabilitation as % of total	%		not known	not known	not known
	Network upgrading	Kms	10	0	0	0
	Network upgrading as % of total	%		0	0	0
	Network planned for periodic next 3 yrs	Kms		not known	not known	not known
	Network planned for rehabilitation next 3 yrs	Kms		not known	not known	not known
	Network planned for upgrading next 3 yrs	Kms		not known	not known	not known
Technical	Total network length in district	Kms	860	650	650	650
	Project network length	Kms	300	250	250	250
	Network length - engineered/gravelled	Kms	100	50	50	50
	Network length - non-engineered	Kms	100	200	200	200
	No of culverts - pipes			not known	500	500
	No of culverts - box			not known	25	25
	No of low level drifts			not known	5	5
	No of bridges		4	not known	2	2
	No of structures inspected			not known	532	532
	No of visual inspection cycles - road			not known	1	1
	No of vehicle counts			not known	nil	nil
	% Network - Very Good			not known	0	0
	% Network - Good			not known	10	10
	% Network - Fair			not known	25	25
	% Network - Poor			not known	25	25
	% Network - Very Poor			not known	40	40
	% Culverts - Very Good			not known	5	5
	% Culverts - Good			not known	50	50
	% Culverts - Fair			not known	20	20
	% Culverts - Poor			not known	15	15
	% Culverts - Very Poor			not known	10	10
% Bridges - Very Good			not known	5	5	

Economic Growth through Effective Road Asset Management

Building Block	Data Item	Unit	Benchmark	2016	Jan 2017 (Baseline)	Oct-17
	% Bridges - Good			not known	30	30
	% Bridges - Fair			not known	30	30
	% Bridges - Poor			not known	30	30
	% Bridges - Very Poor			not known	5	5
	No of impassable points - > 2 days closed			not known	0	0
Operational	No of graders		2	1	1	1
	No of tractors		5	2	2	2
	No of water bowsers			none	none	none
	No of tippers			none	none	none
	No of pedestrican rollers			none	none	none
	No of self propelled rollers			none	none	none
	Average annual utilisation rate - graders	%		not known	not known	not known
	No of roads supervisors		1	1	1	1
	No of foremen		1	1	1	1
	No of skilled and semi-skilled workers		5	2	2	2
	Total man-days of labor utilised			not known	not known	not known
	No of roadworks tenders			not known	not known	not known
	No of contracts awarded			not known	not known	not known
	No of technical audits			nil	nil	nil

**AFCAP GEM PROJECT: ZAMBIA - Chongwe Municipality (2017)**  
**ROAD CONDITION AND ASSET VALUE DASHBOARD**



**AFCAP GEM PROJECT: ZAMBIA - Chongwe Municipality (2017)**  
**ROAD CONDITION AND ASSET VALUE TABLES**

**ROAD NETWORK EXTENT**

TYPE	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
EARTH	113.80	113.80	113.80	113.80	113.80	113.80	46%	46%	46%	46%	46%	46%
GRAVEL	135.80	135.80	135.80	135.80	135.80	135.80	54%	54%	54%	54%	54%	54%
PAVED	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
<b>TOTAL</b>	<b>249.60</b>	<b>249.60</b>	<b>249.60</b>	<b>249.60</b>	<b>249.60</b>	<b>249.60</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**ROAD CONDITION INDEX (RCI) BY YEAR**

	EARTH ROADS						GRAVEL ROADS					
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
GOOD	36.90	36.90	36.90	36.90	36.90	36.90	32%	32%	32%	32%	32%	32%
FAIR	35.30	35.30	35.30	35.30	35.30	35.30	31%	31%	31%	31%	31%	31%
POOR	31.10	31.10	31.10	31.10	31.10	31.10	27%	27%	27%	27%	27%	27%
VERY POOR	10.50	10.50	10.50	10.50	10.50	10.50	9%	9%	9%	9%	9%	9%
<b>TOTAL</b>	<b>-</b>	<b>113.80</b>	<b>113.80</b>	<b>113.80</b>	<b>113.80</b>	<b>113.80</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

	EARTH ROADS						GRAVEL ROADS					
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	5.00	5.00	5.00	5.00	5.00	5.00	4%	4%	4%	4%	4%	4%
GOOD	22.40	22.40	22.40	22.40	22.40	22.40	16%	16%	16%	16%	16%	16%
FAIR	70.30	70.30	70.30	70.30	70.30	70.30	52%	52%	52%	52%	52%	52%
POOR	35.20	35.20	35.20	35.20	35.20	35.20	26%	26%	26%	26%	26%	26%
VERY POOR	2.90	2.90	2.90	2.90	2.90	2.90	2%	2%	2%	2%	2%	2%
<b>TOTAL</b>	<b>-</b>	<b>135.80</b>	<b>135.80</b>	<b>135.80</b>	<b>135.80</b>	<b>135.80</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**FUNCTIONAL INDEX (FI) BY YEAR**

	EARTH ROADS						GRAVEL ROADS					
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	17.30	-	-	-	-	-	20%	0%	0%	0%	0%	0%
GOOD	19.30	23.60	23.60	23.60	23.60	23.60	22%	21%	21%	21%	21%	21%
FAIR	14.70	41.20	41.20	41.20	41.20	41.20	17%	36%	36%	36%	36%	36%
POOR	30.00	38.50	38.50	38.50	38.50	38.50	35%	34%	34%	34%	34%	34%
VERY POOR	5.00	10.50	10.50	10.50	10.50	10.50	6%	9%	9%	9%	9%	9%
<b>TOTAL</b>	<b>86.30</b>	<b>113.80</b>	<b>113.80</b>	<b>113.80</b>	<b>113.80</b>	<b>113.80</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

	EARTH ROADS						GRAVEL ROADS					
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	42.30	9.00	9.00	9.00	9.00	9.00	25%	7%	7%	7%	7%	7%
GOOD	18.40	23.40	23.40	23.40	23.40	23.40	11%	17%	17%	17%	17%	17%
FAIR	48.60	85.30	85.30	85.30	85.30	85.30	29%	63%	63%	63%	63%	63%
POOR	43.40	15.20	15.20	15.20	15.20	15.20	26%	11%	11%	11%	11%	11%
VERY POOR	14.20	2.90	2.90	2.90	2.90	2.90	9%	2%	2%	2%	2%	2%
<b>TOTAL</b>	<b>166.90</b>	<b>135.80</b>	<b>135.80</b>	<b>135.80</b>	<b>135.80</b>	<b>135.80</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**PAVEMENT CONDITION INDEX (PCI) BY YEAR**

	EARTH ROADS						GRAVEL ROADS					
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	-	-	-	-	-	-	-	-	-	-	-	-
GOOD	-	-	-	-	-	-	-	-	-	-	-	-
FAIR	-	-	-	-	-	-	-	-	-	-	-	-
POOR	-	-	-	-	-	-	-	-	-	-	-	-
VERY POOR	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTAL</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>

	EARTH ROADS						GRAVEL ROADS					
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	61.90	28.40	28.40	28.40	28.40	28.40	37%	21%	21%	21%	21%	21%
GOOD	59.80	31.00	31.00	31.00	31.00	31.00	36%	23%	23%	23%	23%	23%
FAIR	45.20	76.40	76.40	76.40	76.40	76.40	27%	56%	56%	56%	56%	56%
POOR	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
VERY POOR	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
<b>TOTAL</b>	<b>166.90</b>	<b>135.80</b>	<b>135.80</b>	<b>135.80</b>	<b>135.80</b>	<b>135.80</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**FORMATION CONDITION INDEX (FCI) BY YEAR**

	EARTH ROADS						GRAVEL ROADS					
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	66.10	87.80	87.80	87.80	87.80	87.80	77%	77%	77%	77%	77%	77%
GOOD	10.20	11.80	11.80	11.80	11.80	11.80	12%	10%	10%	10%	10%	10%
FAIR	10.00	14.20	14.20	14.20	14.20	14.20	12%	12%	12%	12%	12%	12%
POOR	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
VERY POOR	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
<b>TOTAL</b>	<b>86.30</b>	<b>113.80</b>	<b>113.80</b>	<b>113.80</b>	<b>113.80</b>	<b>113.80</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

## AFCAP GEM PROJECT: ZAMBIA - Chongwe Municipality (2017)

## ROAD CONDITION AND ASSET VALUE TABLES

	GRAVEL ROADS											
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	80.40	122.90	122.90	122.90	122.90	122.90	48%	91%	91%	91%	91%	91%
GOOD	49.10	12.90	12.90	12.90	12.90	12.90	29%	9%	9%	9%	9%	9%
FAIR	37.40	-	-	-	-	-	22%	0%	0%	0%	0%	0%
POOR	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
VERY POOR	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
<b>TOTAL</b>	<b>166.90</b>	<b>135.80</b>	<b>135.80</b>	<b>135.80</b>	<b>135.80</b>	<b>135.80</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

## NETWORK CONDITION INDICES BY YEAR

	PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021
NETWORK RCI	58%	58%	58%	58%	58%	58%
% MOVE		0%				
NETWORK FI	66%	59%	59%	59%	59%	59%
% MOVE		-7%				
NETWORK CIP	79%	71%	71%	71%	71%	71%
% MOVE		-8%				
NETWORK CIF	80%	91%	91%	91%	91%	91%
% MOVE		11%				

## ASSET PRESERVATION NEEDS BY YEAR

	MIL US\$						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
ROUTINE	0.50	0.50	0.50	0.50	0.50	0.50	34%	27%	27%	27%	27%	27%
% MOVE		0%						-7%				
PERIODIC	0.60	1.01	1.01	1.01	1.01	1.01	41%	54%	54%	54%	54%	54%
% MOVE		13%										
UPGRADING	0.38	0.38	0.38	0.38	0.38	0.38	26%	20%	20%	20%	20%	20%
REHABILITATION	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
<b>TOTAL</b>	<b>1.47</b>	<b>1.88</b>	<b>1.88</b>	<b>1.88</b>	<b>1.88</b>	<b>1.88</b>						

## BUDGET BY YEAR

	MIL US\$						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
ROUTINE	-	0.07	-	-	-	-	0%	100%	0%	0%	0%	0%
% MOVE		100%										
PERIODIC	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
% MOVE		0%										
UPGRADING	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
REHABILITATION	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
<b>TOTAL</b>	<b>-</b>	<b>0.07</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>						

## ACTUAL EXPENDITURE BY YEAR

	MIL US\$						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
ROUTINE	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
PERIODIC	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
UPGRADING	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
REHABILITATION	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
<b>TOTAL</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>						

## ASSET VALUATION BY YEAR

	MIL US\$/KMS					
	2016 - BASELINE	2017	2018	2019	2020	2021
CURRENT REPLACEMENT COST	6.34	6.34	6.34	6.34	6.34	6.34
% MOVE		0%				
THRESHOLD VALUE REQUIRED	4.44	4.44	4.44	4.44	4.44	4.44
DEPRECIATED REMAINING VALUE	5.57	5.03	5.03	5.03	5.03	5.03
% MOVE		-10%				
DEPRECIATED/LOST VALUE	0.77	1.31	1.31	1.31	1.31	1.31
LENGTH < THRESHOLD VALUE		23.30	23.30	23.30	23.30	23.30

## ASSET SUSTAINABILITY RATIOS AND INDICES

	2016 - BASELINE	2017	2018	2019	2020	2021
Road Asset Preservation Index	0.88	0.79	0.79	0.79	0.79	0.79
% MOVE		-10%	0%			
Road Asset Preservation Funding	-	-	-	-	-	-
% MOVE		0%	0%			

**AFCAP GEM PROJECT: ZAMBIA - Chongwe Municipality (2017)**  
**ASSET VALUE CALCULATION**

BASIC INFORMATION ON ROAD AND SECTIONS										CURRENT REPLACEMENT COST						EXPECTED THRESHOLD VALUE						CURRENT ASSET VALUE						ANALYSIS				
GEM Road No.	Road No.	Road Name	Road Type	Segment No.	Start Km	End Km	Length (km)	Expected Useful Life - EUL (Yrs)		Gravel Road Cost (\$)	CRC Cost/Km: Formation (\$)	CRC Cost/Km: Pavement (\$)	Formation CRC Cost (\$)	Pavement CRC Cost (\$)	Current Replacement Cost (\$)	Min. Threshold Condition - Rating		Remaining Useful Life (RUL) at Threshold Condition (Yrs)		Depreciated Remaining Cost (DRC) at Threshold Condition (\$)		Asset Value at Threshold Condition (\$)	Current Condition Rating		Remaining Useful Life (RUL) at Current Condition (Yrs)		Depreciated Remaining Cost (DRC) at Current Condition (\$)		Current Asset Value (\$)	Current Asset Value as % of CRC	Current Asset Value as % of Min Threshold Value	Roads with Condition Less than Permissible (Kms)
								Formation	Pavement							Formation	Pavement	Formation	Pavement	Formation	Pavement		Formation	Pavement	Formation	Pavement	Formation	Pavement				
1	0	Mpemba - Molenje	Gravel	1	+0	5+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Fair	47.5	4.9	64 125.00	57 750.00	121 875.00	81%	116%	
1	0	Mpemba - Molenje	Gravel	2	5+000	10+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Good	47.5	6.0	64 125.00	70 125.00	134 250.00	90%	128%	
1	0	Mpemba - Molenje	Earth	3	10+000	15+200	5.20	50	n/a	30 000.00	13 500.00	16 500.00	70 200.00	0.00	70 200.00	Fair	n/a	35.0	-	49 140.00	-	49 140.00	Very Good	n/a	47.5	-	66 690.00	-	66 690.00	95%	136%	
2	U1/U2	Mwalumina - Chongwe River	Gravel	1	+0	5+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Fair	47.5	4.9	64 125.00	57 750.00	121 875.00	81%	116%	
2	U1/U2	Mwalumina - Chongwe River	Gravel	2	5+000	10+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Fair	47.5	4.9	64 125.00	57 750.00	121 875.00	81%	116%	
2	U1/U2	Mwalumina - Chongwe River	Gravel	3	10+000	15+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Fair	47.5	4.9	64 125.00	57 750.00	121 875.00	81%	116%	
2	U1/U2	Mwalumina - Chongwe River	Gravel	4	15+000	20+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Fair	47.5	4.9	64 125.00	57 750.00	121 875.00	81%	116%	
2	U1/U2	Mwalumina - Chongwe River	Gravel	5	20+000	25+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Fair	47.5	4.9	64 125.00	57 750.00	121 875.00	81%	116%	
2	U1/U2	Mwalumina - Chongwe River	Gravel	6	25+000	30+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Fair	47.5	4.9	64 125.00	57 750.00	121 875.00	81%	116%	
2	U1/U2	Mwalumina - Chongwe River	Gravel	7	30+000	35+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Fair	47.5	4.9	64 125.00	57 750.00	121 875.00	81%	116%	
2	U1/U2	Mwalumina - Chongwe River	Gravel	8	35+000	40+200	5.20	50	7	30 000.00	13 500.00	16 500.00	70 200.00	85 800.00	156 000.00	Fair	Fair	35.0	4.9	49 140.00	60 060.00	109 200.00	Very Good	Fair	47.5	4.9	66 690.00	60 060.00	126 750.00	81%	116%	
3	U16	Lukoshi - Nchute	Gravel	1	+0	5+000	5.00	50	7	45 000.00	20 250.00	24 750.00	101 250.00	123 750.00	225 000.00	Fair	Fair	35.0	4.9	70 875.00	86 625.00	157 500.00	Very Good	n/a	47.5	-	96 187.50	-	96 187.50	43%	61%	
3	U16	Lukoshi - Nchute	Gravel	2	5+000	10+000	5.00	50	7	45 000.00	20 250.00	24 750.00	101 250.00	123 750.00	225 000.00	Fair	Fair	35.0	4.9	70 875.00	86 625.00	157 500.00	Very Good	n/a	47.5	-	96 187.50	-	96 187.50	43%	61%	
3	U16	Lukoshi - Nchute	Gravel	3	10+000	15+000	5.00	50	7	45 000.00	20 250.00	24 750.00	101 250.00	123 750.00	225 000.00	Fair	Fair	35.0	4.9	70 875.00	86 625.00	157 500.00	Very Good	n/a	47.5	-	96 187.50	-	96 187.50	43%	61%	
3	U16	Lukoshi - Nchute	Gravel	4	15+000	18+300	3.30	50	7	45 000.00	20 250.00	24 750.00	66 825.00	81 675.00	148 500.00	Fair	Fair	35.0	4.9	46 777.50	57 172.50	103 950.00	Very Good	n/a	47.5	-	63 483.75	-	63 483.75	43%	61%	
4	0	Ndapula - Lwimba River	Gravel	1	+0	5+000	5.00	50	7	45 000.00	20 250.00	24 750.00	101 250.00	123 750.00	225 000.00	Fair	Fair	35.0	4.9	70 875.00	86 625.00	157 500.00	Very Good	n/a	47.5	-	96 187.50	-	96 187.50	43%	61%	
5	0	Jakapa - Chibwalu	Earth	1	+0	5+000	5.00	50	n/a	30 000.00	13 500.00	16 500.00	67 500.00	0.00	67 500.00	Fair	n/a	35.0	-	47 250.00	-	47 250.00	Very Good	n/a	47.5	-	64 125.00	-	64 125.00	95%	136%	
5	0	Jakapa - Chibwalu	Earth	2	5+000	10+000	5.00	50	n/a	30 000.00	13 500.00	16 500.00	67 500.00	0.00	67 500.00	Fair	n/a	35.0	-	47 250.00	-	47 250.00	Good	n/a	42.5	-	57 375.00	-	57 375.00	85%	121%	
6	0	Kasubanya	Earth	1	+0	5+000	5.00	50	n/a	30 000.00	13 500.00	16 500.00	67 500.00	0.00	67 500.00	Fair	n/a	35.0	-	47 250.00	-	47 250.00	Very Good	n/a	47.5	-	64 125.00	-	64 125.00	95%	136%	
6	0	Kasubanya	Earth	2	5+000	8+600	3.60	50	n/a	30 000.00	13 500.00	16 500.00	48 600.00	0.00	48 600.00	Fair	n/a	35.0	-	34 020.00	-	34 020.00	Very Good	n/a	47.5	-	46 170.00	-	46 170.00	95%	136%	
7	U14	Mwampatisha	Earth	1	+0	5+000	5.00	50	n/a	30 000.00	13 500.00	16 500.00	67 500.00	0.00	67 500.00	Fair	n/a	35.0	-	47 250.00	-	47 250.00	Very Good	n/a	47.5	-	64 125.00	-	64 125.00	95%	136%	
0	U14	Mwampatisha	Earth	2	5+000	9+500	4.50	50	n/a	30 000.00	13 500.00	16 500.00	60 750.00	0.00	60 750.00	Fair	n/a	35.0	-	42 525.00	-	42 525.00	Fair	n/a	35.0	-	42 525.00	-	42 525.00	70%	100%	
8	U3	Mutumbisha	Earth	1	+0	6+800	6.80	50	n/a	30 000.00	13 500.00	16 500.00	91 800.00	0.00	91 800.00	Fair	n/a	35.0	-	64 260.00	-	64 260.00	Good	n/a	42.5	-	78 030.00	-	78 030.00	85%	121%	
9	U13	Mufwasha	Earth	1	+0	4+200	4.20	50	n/a	30 000.00	13 500.00	16 500.00	56 700.00	0.00	56 700.00	Fair	n/a	35.0	-	39 690.00	-	39 690.00	Fair	n/a	35.0	-	39 690.00	-	39 690.00	70%	100%	
10	0	Chishiko - Kabeleka	Earth	1	+0	4+500	4.50	50	n/a	30 000.00	13 500.00	16 500.00	60 750.00	0.00	60 750.00	Fair	n/a	35.0	-	42 525.00	-	42 525.00	Very Good	n/a	47.5	-	57 712.50	-	57 712.50	95%	136%	
10	0	Chishiko - Kabeleka	Earth	2	4+500	8+600	4.10	50	n/a	30 000.00	13 500.00	16 500.00	55 350.00	0.00	55 350.00	Fair	n/a	35.0	-	38 745.00	-	38 745.00	Very Good	n/a	47.5	-	52 582.50	-	52 582.50	95%	136%	
11	U4	Kalulu	Earth	1	+0	5+500	5.50	50	n/a	30 000.00	13 500.00	16 500.00	74 250.00	0.00	74 250.00	Fair	n/a	35.0	-	51 975.00	-	51 975.00	Fair	n/a	35.0	-	51 975.00	-	51 975.00	70%	100%	
12	0	Matipula	Gravel	1	+0	3+000	3.00	50	7	30 000.00	13 500.00	16 500.00	40 500.00	49 500.00	90 000.00	Fair	Fair	35.0	4.9	28 350.00	34 650.00	63 000.00	Very Good	Good	47.5	6.0	38 475.00	42 075.00	80 550.00	90%	128%	
12	0	Matipula	Gravel	2	3+000	6+300	3.30	50	7	30 000.00	13 500.00	16 500.00	44 550.00	54 450.00	99 000.00	Fair	Fair	35.0	4.9	31 185.00	38 115.00	69 300.00	Very Good	Fair	47.5	4.9	42 322.50	38 115.00	80 437.50	81%	116%	

## AFCAP GEM PROJECT: ZAMBIA - Chongwe Municipality (2017)

### ASSET VALUATION DATA

**Expected Useful Life**

Gravel Pavement	7 years
Formation	50 yrs

**Costs per Km**

Total CRC/Km Gravel Road	30 000.00
Formation	45% 13 500.00 US\$
Gravel Pavement	55% 16 500.00 US\$
Routine Maintenance	2 000.00 US\$
Periodic Maintenance - Regravel	13 200.00 US\$
Rehabilitation	19 800.00 US\$
Upgrading	16 500.00 US\$

**Min Threshold Conditions**

Gravel Layer	Fair
Formation	Fair

**Road Maintenance and Development Needs Parameters**

	2016 Baseline	2017	2018	2019	2020	2021
% of Network to Maintain	100%	100%	100%	100%	100%	100%
% of Fair for Periodic	100%	100%	100%	100%	100%	100%
% of Poor and V.Poor for Rehab	50%	50%	50%	50%	50%	50%
% of Earth Roads to Upgrade	20%	20%	20%	20%	20%	20%

**Costs per Km (Actual)**

Routine Maintenance	85.00 US\$
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**Budget History (million US\$)**

	2016 Baseline	2017	2018	2019	2020	2021
Routine Maintenance	-	0.07	-	-	-	-
Periodic Maintenance	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-
Rehabilitation	-	-	-	-	-	-
<b>Total</b>	-	0.07	-	-	-	-

**Actual Expenditure (million US\$)**

	2016 Baseline	2017	2018	2019	2020	2021
Routine Maintenance	-	-	-	-	-	-
Periodic Maintenance	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-
Rehabilitation	-	-	-	-	-	-
<b>Total</b>	-	-	-	-	-	-

AFCAP GEM PROJECT: ZAMBIA - Chongwe Municipality (2017)

ROAD FUNCTIONALITY AND CONDITION INDICES

D - DEGREE/SEVERITY		E - DEFECT EXTENT/OCCURRENCE/QUANTITY														CONDITION RATING CRITERIA																								
1. Slight 2. Slight to Warning 3. Warning 4. Warning to Severe 5. Severe		% of length: 1. <5% 2. 5-10% 3. 10-25% 4. 25-50% 5 >50%														Very Poor: <30% Poor: 30-50% Fair: 50-70% Good: 70-85% Very Good: >85%																								
GEM Road No	Road No	Road Name	Road Type	Segment No.	Start Km	End Km	Length (km)	Gravel Loss		Usable Width		Erosion C-Way		Erosion S/Drains		Potholes		Corrugation		Rutting		Impassability		Road Condition Index - RCI (%)				Functionality Index - FI (%)				Condition Index - Pavement - CIP (%)				Condition Index - Formation - CIF (%)				
								D	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	Segment CI	Segment CI Rating	RCI	RCI Rating	Segment FI	Segment FI Rating	Road FI	Road FI Rating	Segment CIP	Segment CIP Rating	Road CIP
1		Mpemba - Mulenje	Gravel	1	+0	5+000	5.0	4	3	1	1	3	3	4	5	3	3	1	2	1	1	2	1	44.4	Poor	46.2	Poor	60.3	Fair	61.3	Fair	66.4	Fair	47.6	Poor	96.8	Very Good	94.1	Very Good	
1		Mpemba - Mulenje	Gravel	2	5+000	10+000	5.0	3	3	1	1	2	2	4	5	3	3	1	2	1	1	2	1	46.8	Poor	46.2	Poor	63.3	Fair	61.3	Fair	76.4	Good	47.6	Poor	96.8	Very Good	93.9	Very Good	
1		Mpemba - Mulenje	Earth	3	10+000	15+200	5.2	0	0	1	1	3	3	4	5	3	3	1	2	1	1	5	1	47.5	Poor	46.2	Poor	60.3	Fair	61.3	Fair	-	n/a	47.6	Poor	96.8	Very Good	96.8	Very Good	
2	U1/U2	Mwalumina - Chongwe River	Gravel	1	+0	5+000	5.0	4	5	2	1	1	1	1	1	3	3	1	3	2	2	0	0	47.9	Poor	53.5	Fair	63.8	Fair	61.8	Fair	53.4	Fair	60.4	Fair	91.6	Very Good	94.1	Very Good	
2	U1/U2	Mwalumina - Chongwe River	Gravel	2	5+000	10+000	5.0	3	5	1	1	2	2	1	1	3	3	1	3	2	2	0	0	57.6	Fair	53.5	Fair	62.7	Fair	61.8	Fair	64.4	Fair	60.4	Fair	96.8	Very Good	93.9	Very Good	
2	U1/U2	Mwalumina - Chongwe River	Gravel	3	10+000	15+000	5.0	3	5	2	1	2	2	1	2	3	3	2	3	1	2	4	2	56.8	Fair	53.5	Fair	62.3	Fair	61.8	Fair	63.4	Fair	60.4	Fair	91.6	Very Good	94.2	Very Good	
2	U1/U2	Mwalumina - Chongwe River	Gravel	4	15+000	20+000	5.0	3	5	1	1	1	1	1	1	2	2	2	2	1	1	0	0	60.2	Fair	53.5	Fair	79.9	Good	61.8	Fair	64.4	Fair	60.4	Fair	96.8	Very Good	89.9	Very Good	
2	U1/U2	Mwalumina - Chongwe River	Gravel	5	20+000	25+000	5.0	3	5	1	1	1	1	1	1	3	3	2	2	1	1	0	0	58.4	Fair	53.5	Fair	63.9	Fair	61.8	Fair	64.4	Fair	60.4	Fair	96.8	Very Good	93.1	Very Good	
2	U1/U2	Mwalumina - Chongwe River	Gravel	6	25+000	30+000	5.0	3	5	1	1	1	1	1	1	3	4	2	3	1	1	0	0	57.0	Fair	53.5	Fair	55.9	Fair	61.8	Fair	64.4	Fair	60.4	Fair	96.8	Very Good	91.7	Very Good	
2	U1/U2	Mwalumina - Chongwe River	Gravel	7	30+000	35+000	5.0	4	5	1	1	2	2	3	1	3	2	3	4	1	1	0	0	46.0	Poor	53.5	Fair	56.6	Fair	61.8	Fair	54.4	Fair	60.4	Fair	96.8	Very Good	96.8	Very Good	
2	U1/U2	Mwalumina - Chongwe River	Gravel	8	35+000	40+200	5.2	4	5	1	1	3	3	1	1	3	4	3	4	2	2	0	0	44.5	Poor	53.5	Fair	49.4	Poor	61.8	Fair	54.4	Fair	60.4	Fair	96.8	Very Good	96.8	Very Good	
3	U16	Lukoshi - Nchute	Earth	1	+0	5+000	5.0	0	0	1	1	1	1	1	1	4	4	3	3	2	2	0	0	83.5	Good	73.7	Good	80.3	Good	65.2	Fair	-	n/a	0.0	n/a	96.8	Very Good	94.1	Very Good	
3	U16	Lukoshi - Nchute	Earth	2	5+000	10+000	5.0	0	0	1	1	2	2	1	1	3	3	1	3	1	1	0	0	72.9	Good	73.7	Good	63.0	Fair	65.2	Fair	-	n/a	0.0	n/a	96.8	Very Good	93.9	Very Good	
3	U16	Lukoshi - Nchute	Earth	3	10+000	15+000	5.0	0	0	1	1	2	2	1	1	3	4	1	3	1	1	0	0	67.9	Fair	73.7	Good	56.0	Fair	65.2	Fair	-	n/a	0.0	n/a	96.8	Very Good	94.2	Very Good	
3	U16	Lukoshi - Nchute	Earth	4	15+000	18+300	3.3	0	0	1	1	2	2	3	2	3	3	2	3	1	1	0	0	70.6	Good	73.7	Good	61.8	Fair	65.2	Fair	-	n/a	0.0	n/a	96.8	Very Good	96.8	Very Good	
4		Ndapula - Lwimba River	Earth	1	+0	5+000	5.0	0	0	1	1	3	2	1	1	4	4	3	2	1	1	0	0	55.2	Fair	55.2	Fair	42.7	Poor	42.7	Poor	-	n/a	0.0	n/a	96.8	Very Good	94.1	Very Good	
5		Jakapa - Chibwalu	Earth	1	+0	5+000	5.0	0	0	2	2	3	3	1	1	4	4	3	2	2	0	0	52.6	Fair	38.4	Poor	39.8	Poor	28.4	Very Poor	-	n/a	0.0	n/a	96.8	Very Good	94.1	Very Good		
5		Jakapa - Chibwalu	Earth	2	5+000	10+000	5.0	0	0	3	3	4	4	1	1	5	5	2	2	4	2	3	2	24.3	Very Poor	38.4	Poor	17.1	Very Poor	28.4	Very Poor	-	n/a	0.0	n/a	96.8	Very Good	93.9	Very Good	
6		Kasubanya	Earth	1	+0	5+000	5.0	0	0	2	2	2	2	1	1	3	3	2	3	2	2	0	0	70.5	Good	63.4	Fair	61.5	Fair	53.1	Fair	-	n/a	0.0	n/a	85.4	Good	94.1	Very Good	
6		Kasubanya	Earth	2	5+000	8+600	3.6	0	0	1	1	2	2	1	1	4	4	2	2	1	1	0	0	56.4	Fair	63.4	Fair	44.8	Poor	53.1	Fair	-	n/a	0.0	n/a	96.8	Very Good	96.8	Very Good	
7	U14	Mwampatisha	Earth	1	+0	5+000	5.0	0	0	3	3	3	3	0	0	4	4	1	2	3	2	1	53.9	Fair	48.9	Poor	42.1	Poor	44.4	Poor	-	n/a	0.0	n/a	97.0	Very Good	94.1	Very Good		
7	U14	Mwampatisha	Earth	2	5+000	9+500	4.5	0	0	4	3	4	3	2	0	3	3	0	0	4	5	4	2	43.9	Poor	48.9	Poor	46.7	Poor	44.4	Poor	-	n/a	0.0	n/a	66.2	Fair	66.2	Fair	
8	U3	Mutumbisha	Earth	1	+0	6+800	6.8	0	0	3	2	4	5	1	1	3	2	0	0	2	2	1	1	48.8	Poor	48.8	Poor	44.3	Poor	44.3	Poor	-	n/a	0.0	n/a	81.4	Good	81.4	Good	
9	U13	Mufwasha	Earth	1	+0	4+200	4.2	0	0	4	3	5	4	1	1	4	3	0	0	3	3	3	1	35.8	Poor	35.8	Poor	31.8	Poor	31.8	Poor	-	n/a	0.0	n/a	66.2	Fair	66.2	Fair	
10		Chishiko - Kabeleka	Earth	1	+0	4+500	4.5	0	0	1	1	2	1	3	2	0	0	0	2	1	1	1	77.1	Good	78.4	Good	72.9	Good	78.4	Good	-	n/a	0.0	n/a	96.8	Very Good	96.8	Very Good		
10		Chishiko - Kabeleka	Earth	2	4+500	8+600	4.1	0	0	1	1	1	1	1	1	2	1	0	0	3	2	1	1	79.8	Good	78.4	Good	83.9	Good	78.4	Good	-	n/a	0.0	n/a	96.8	Very Good	96.8	Very Good	
11	U4	Kalulu	Earth	1	+0	5+500	5.5	0	0	4	4	5	5	1	1	3	3	0	0	2	2	1	1	27.1	Very Poor	27.1	Very Poor	27.7	Very Poor	27.7	Very Poor	-	n/a	0.0	n/a	60.2	Fair	60.2	Fair	
12		Matipula	Gravel	1	+0	3+000	3.0	4	2	2	2	2	1	2	1	3	2	2	2	4	2	0	0	63.6	Fair	59.7	Fair	68.8	Fair	66.1	Fair	70.2	Good	67.8	Fair	85.6	Very Good	85.6	Very Good	
12		Matipula	Gravel	2	3+000	6+300	3.3	4	3	2	1	4	2	4	2	3	2	2	1	4	2	0	0	55.9	Fair	59.7	Fair	63.4	Fair	66.1	Fair	65.4	Fair	67.8	Fair	91.6	Very Good	91.6	Very Good	
13	U18	Mapulanga-Chiyota	Earth	1	+0	5+000	5.0	0	0	1	1	2	2	2	1	1	1	1	1	2	3	0	0	78.0	Good	70.4	Good	83.5	Good	71.9	Good	-	n/a	0.0	n/a	96.8	Very Good	94.1	Very Good	
13	U18	Mapulanga-Chiyota	Earth	2	5+000	10+000	5.0	0	0	1	1	2	2	1	1	2	2	1	1	3	3	0	0	72.4	Good	70.4	Good	78.2	Good	71.9	Good	-	n/a	0.0	n/a	96.8	Very Good	93.9	Very Good	
13	U18	Mapulanga-Chiyota	Earth	3	10+000	15+500	5.5	0	0	2	1	4	3	3	1	3	2	1	1	2	2	3	1	60.9	Fair	70.4	Good	54.1	Fair	71.9	Good	-	n/a	0.0	n/a	91.6	Very Good	91.6	Very Good	
14	U9	T4 - Kapete	Gravel	1	+0	4+000	4.0	3	4	1	1	4	2	2	1	2	2	1	1	2	2	0	0	63.8	Fair	69.2	Fair	66.7	Fair	81.8	Good	71.4	Good	73.1	Good	96.8	Very Good	96.8	Very Good	
14	U9	T4 - Kapete	Gravel	2	4+000	8+000	4.0	2	3	1	1	2	1	1	1	1	1	1	1	2	1	1	0	0	79.2	Good	69.2	Fair	88.9	Very Good	81.8	Good	81.4	Good	73.1	Good	96.8	Very Good	96.8	Very Good
14	U9	T4 - Kapete	Gravel	3	8+000	13+000	5.0	4	3	1	1	1	1	1	1	3	3	2	3	1	1	0	0	64.5	Fair	69.2	Fair	89.9	Very Good	81.8	Good	66.4	Fair	73.1	Good	96.8	Very Good	96.8	Very Good	
15		Mupelekes	Gravel	1	+0	5+000	5.0	2	1	1	1	1	1	1	1	2	2	2	2	1	1	0	0	81.8	Good	70.9	Good	79.9	Good	67.6	Fair	91.4	Very Good	89.3	Very Good	96.8	Very Good	94.1	Very Good	
15		Mupelekes	Gravel	2	5+000	10+000	5.0	2	1	1	1	1	1	1	1	3	3	3	3	1	1	0	0	71.0	Good	70.9	Good	60.7	Fair	67.6	Fair	91.4	Very Good	89.3	Very Good	96.8	Very Good	93.9	Very Good	
15		Mupelekes	Gravel	3	10+000	15+000	5.0	2	1	1	1	1	1	1	1	4	3	3	3	1	1	0	0	61.0	Fair	70.9	Good	50.7	Fair	67.6	Fair	91.4	Very Good	89.3	Very Good	96.8	Very Good	94.2	Very Good	
15		Mupelekes	Gravel	4	15+000	20+000	5.0	3	5	3	2	4	2	4	3	2	2	2	2	1	1	3	1	53.3	Fair	70.9	Good	66.2	Fair	67.6	Fair	61.4	Fair	89.3	Very Good	81.4	Good	89.9	Very Good	
15		Mupelekes	Gravel	5	20+000	25+000	5.0	1	1	1	1	1	1	1	1	1	3	3	1	1	1	0	0	85.3	Very Good	70.9	Good	80.9	Good	67.6	Fair	96.4	Very Good	89.3	Very Good	96.8	Very Good	93.1	Very Good	
15																																								

**AFCAP GEM - RURAL ROAD SECTOR SUSTAINABILITY ASSESSMENT (NOV 2017): UGANDA - UNRA**

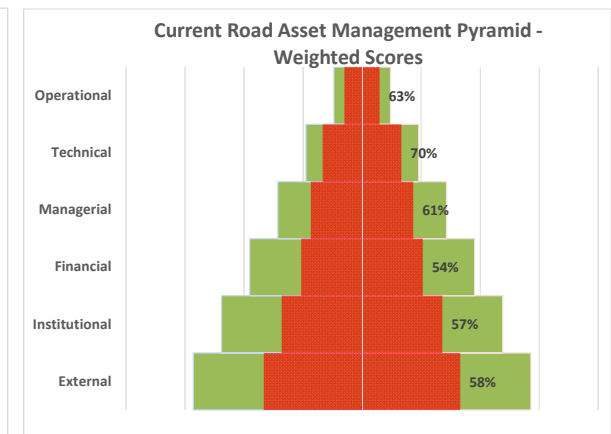
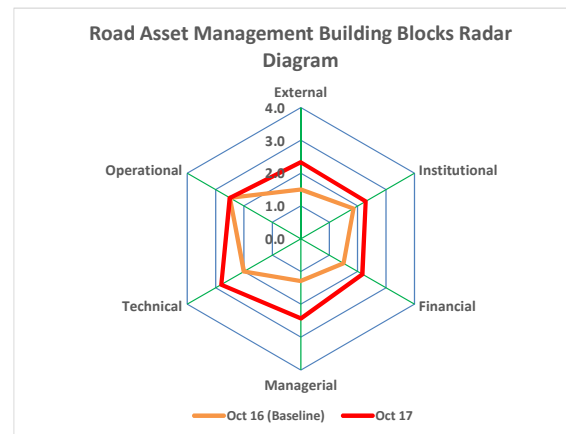
Building Block	#	Item Assessed	Oct 16 (Baseline)	Oct 17
External	1.1	National policy for rural roads		4
	1.2	Existence of rural road maintenance strategy		2
	1.3	Stakeholder consultation	2	3
	1.4	Tabling of budgets		2
	1.5	Reporting back to stakeholders		1
	1.6	Involvement in programmes at local level	1	2
Institutional	2.1	AM policy development	2	3
	2.2	Level of service - existence	1	3
	2.3	Level of service - use	1	3
	2.4	Emergency response plan	2	1
	2.5	Staff roles and responsibilities	1	2
	2.6	Staff training and capacity building	2	1
	2.7	Staff salaries	4	3
Financial	3.1	Provision of road maintenance funding	3	1
	3.2	Budget funding against perceived need	3	2
	3.3	Asset valuation	0	2
	3.4	Budget funding - asset value	0	2
	3.5	Financial forecasting	0	3
	3.6	Accounting system	3	3
Managerial	4.1	AM system	1	1
	4.2	Maintenance intervention levels	0	2
	4.3	Maintenance plans - existence	3	3
	4.4	Maintenance plans - methods used	2	3
	4.5	Maintenance backlog	1	3
	4.6	Traffic forecasting	0	2
	4.7	Capital expenditure - basis for	2	3
Technical	5.1	Road referencing system - existence	4	3
	5.2	Road inventory - existence	2	2
	5.3	Road inventory data	2	2
	5.4	Road condition assessment	1	3
	5.5	Asset utilisation	1	4

Assessment Scoring Criteria:	
< 0	Very Poor
0-1	Poor
1-2	Fair
2-3	Good
3-4	Very Good

Weighting Ranking	Building Block	Max. Possible Score	Oct 16 (Baseline)	Oct 17
1	External	4	1.5	2.3
2	Institutional	4	1.9	2.3
3	Financial	4	1.5	2.2
4	Managerial	4	1.3	2.4
5	Technical	4	2.0	2.8
6	Operational	4	2.5	2.5
<b>Road Sector Sustainability Assessment Score</b>			<b>1.6</b>	<b>2.4</b>
<b>Road Sector Sustainability Rating</b>			<b>Fair</b>	<b>Good</b>
<b>Road Sector Sustainability Index (RSSI)</b>			<b>0.41</b>	<b>0.59</b>

Weighting
0.29
0.24
0.19
0.14
0.10
0.05
1.00

(Scale: 0 - 1)



## AFCAP GEM - RURAL ROAD SECTOR SUSTAINABILITY ASSESSMENT (NOV 2017): UGANDA - UNRA

### BUILDING BLOCK 1: EXTERNAL

Key objective:	Facilitate delivery of a broad range of benefits to rural communities through effective interaction with external stakeholders.
Element:	AM policy and strategy
Issue:	The existence of an AM policy that is: <ul style="list-style-type: none"> <li>• Relevant to the rural transport sector;</li> <li>• Supported by senior decision makers;</li> <li>• Adopted at the highest level in government.</li> </ul>
Element:	Stakeholder engagement
Issue:	Engagement with stakeholders by means of informed consultations and a culture of open communications and knowledge sharing in order to: <ul style="list-style-type: none"> <li>• Understand their needs and expectations by helping to identify local requirements, alternatives and solutions to problems;</li> <li>• Lobby political support for adequate AM plans and related maintenance funding;</li> <li>• Influence the development of the district's AM strategies;</li> <li>• Communicate the district's programmes and targets;</li> <li>• Assess how the district's performance is rated by stakeholders.</li> </ul>

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
1.1 (a)	Is there a national policy for rural roads which has been adopted by the central government?	YES				1	4
1.1 (b)	Does the national policy define the roles and responsibilities of the agencies responsible for managing rural roads?	YES				1	
1.1 (c)	Does the national policy identify funding sources that are adequate for maintenance of the rural road network?	YES			0	1	
1.1 (d)	Does the national policy define stakeholder groups to be consulted in the management of rural roads?	YES				1	
1.2 (a)	Is there a national policy for maintenance of rural roads?	YES				1	2
1.2 (b)	Does the rural roads maintenance policy require the development of a strategy for undertaking sustainable rural road maintenance?	YES				1	
1.2 (c)	Does the rural roads maintenance strategy ensure that rural road improvement is linked to a simultaneous commitment to the annual maintenance costs?	NO			0		
1.2 (d)	Does the rural roads maintenance strategy require the rural road agencies to minimise the total costs of ownership by adopting whole-life approaches (leading to optimum balance between capital and recurrent budgets)?	NO					
1.3 (a)	Does the agency generally communicate with road users, local inhabitants and local businesses/stakeholders?	YES		1		1	
1.3 (b)	Does the agency conduct consultations with members of the public (road users, local inhabitants and local businesses) at least annually?	YES				1	

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
1.3 (c)	Does the agency use a range of techniques to communicate with stakeholders e.g. surveys, public notices, community radio, media releases, newsletters, telephone hotlines and social media?	YES			1	1	3
1.3 (d)	Does the agency have developed strategies and guidelines for community consultation and information dissemination?	NO					
1.4 (a)	Does the agency actively seek participation of local stakeholders and road users in the preparation of strategic plans, programmes and budgets for road works?	NO					
1.4 (b)	Does the agency present its strategic plans at Ministry/Parliament meetings to map out plans for short, medium and long term programmes?	YES			0	1	2
1.4 (c)	Does the agency actively participate in inter-sectoral/ministerial and inter-agency district development programmes at regional and national level through established structures?	NO					
1.4 (d)	Does the agency table road budgets at ministry meetings before implementing works?	YES				1	
1.5 (a)	Does the agency table periodic roadworks progress reports to the Ministry for information?	YES				1	1
1.5 (b)	Does the agency maintain a public display of road works acquittal reports for accessing by the public?	NO			0		
1.6 (a)	Does the agency actively communicate with the local government ministry, districts and the Road Fund through established structures on road preservation matters?	YES		1	2	1	2
1.6 (b)	Does the agency participate through established structures at regional and national level in development programmes for other sectors?	NO	UNRA liasing with energy, tourism ministries, agriculture	1		1	

**BUILDING BLOCK 2: INSTITUTIONAL**

Key objective: Successful implementation of road asset preservation practice through support of the district executives, an adequate organisational structure, adequate number of trained staff.

Element: AM policy and strategy

Issue:

- ☐ The existence of an AM policy and strategy that is supported by senior leadership;
- ☐ Need to recruit and retain capable staff by offering competitive salaries;
- ☐ An appropriate organisational structure with an adequate complement of appropriately trained staff with the necessary core competencies;
- ☐ The extent to which staff involved in the process understand and support it and are willing to contribute and improve it;
- ☐ KPIs that can be used to measure the quality of the service the agency provides;
- ☐ Means (funding) for outsourcing of all strategic, non-core activities (e.g. instrumented surveys such as roughness and deflection measurements).

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
2.1 (a)	Does the agency have an informal AM policy and associated strategy?	YES		1		1	
2.1 (b)	Does the agency have a formal AM policy?	NO	Awaiting approvals	1			
2.1 (c)	Does the agency's AM policy align with its corporate vision and mission?	YES			2	1	3

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
2.1 (d)	Does the agency's AM policy take into account stakeholder needs and expectations?	YES				1	
2.2(a)	Have the basic levels of service been defined?	YES		1		1	
2.2 (b)	Are the differing requirements of stakeholders understood?	YES				1	
2.2 (c)	Are stakeholders/road users consulted when determining the levels of service?	YES			1	1	3
2.2 (d)	Is the level of service consultation strategy developed and implemented?	NO					
2.3 (a)	Is the contribution of the road network to the road agency's objectives defined?	YES		1		1	
2.3 (b)	Are the levels of service linked to measures of asset performance?	YES				1	
2.3 (c)	Is the cost to fulfil the level of service requirements known?	YES			1	1	3
2.3 (d)	Are the levels of service integral to decision making and business planning?	NO					
2.4 (a)	Are emergency responses understood by key members of staff?	YES		1		1	
2.4 (b)	Does the agency have a formal emergency response plan?	NO					
2.4 (c)	Is the safety of infrastructure routinely assessed?	NO			2		1
2.4 (d)	Are formal debriefs given to appropriate staff after severe damage to infrastructure as a result of a traffic accident (e.g. bridge strike) or climate induced event (e.g. washout)?	NO		1			
2.5 (a)	Does the agency's organisational structure identify roles, responsibilities and competencies of key staff, aligned with its AM policy, strategies, objectives and plans?	YES		1		1	
2.5 (b)	Are the roles, responsibilities and organisational commitment for AM documented and communicated to all relevant people?	NO					
2.5 (c)	Does the agency have an adequate complement of appropriately qualified staff with designated responsibilities to undertake its AM mandate?	NO			1		2
2.5 (d)	Is the agency able to outsource its non-core activities (e.g. instrumented surveys such as roughness and deflections)?	YES				1	
2.6 (a)	Does the agency offer training opportunities for staff?	YES		1		1	
2.6 (b)	Does AM specific training occur for primary staff?	NO		1			
2.6 (c)	Has the agency implemented an on-going training programme to address required AM competencies?	NO			2		1
2.6 (d)	Is there a formal AM capacity building programme which is routinely monitored?	NO					
2.7 (a)	Are agency engineer salaries less than 50% of comparable private sector positions?	YES		1		1	
2.7 (b)	Are agency engineer salaries 50-80% of comparable private sector positions?	YES		1		1	
2.7 (c)	Are agency salaries roughly the same as comparable private sector positions?	YES		1	4	1	3
2.7 (d)	Are RA salaries greater than comparable private sector positions?	NO		1			

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
<b>BUILDING BLOCK 3: FINANCIAL</b>							
<p>Key objective: The achieve stable, adequate and sustainable funding for maintenance.                      Element: Financial arrangements                      Issue:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A stable, adequate and sustainable source(s) of funding for maintenance;</li> <li><input type="checkbox"/> Annual asset valuation of road infrastructure assets;</li> <li><input type="checkbox"/> Costing framework for determining unit costs of works;</li> <li><input type="checkbox"/> Budgeting and programming processes;</li> <li><input type="checkbox"/> Prioritised maintenance investment plan;</li> <li><input type="checkbox"/> Risk strategy to address potential consequences of inadequate funding (e.g. emergency response);</li> <li><input type="checkbox"/> Financial accounting and auditing of expenditure.</li> </ul>							
ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
3.1 (a)	Does the agency depend only on the consolidated fund for road maintenance?	YES	URF taken as the Condolitated fund	1	3		1
3.1 (b)	Is the funding received from the consolidated fund related to road asset condition and performance?	NO		1			
3.1 ©	Does the agency get a fixed share of its maintenance funding requirement from a Road Fund and/or central government?	YES		1		1	
3.1 (d)	Does the agency get a variable share of its maintenance funding requirement from the Road Fund and/or central government that is related to road asset condition and performance?	NO					
3.2 (a)	Is the percentage of the budgeted funding for routine and periodic maintenance obtained < 30 % of that required?	NO		1	3		2
3.2 (b)	Is the percentage of the budgeted funding obtained 30% - 59% of that required.	YES		1		2	
3.2 ©	Is the percentage of the budgeted funding obtained 60% - 89% of that required?	NO		1			
3.2 (d)	Is the percentage of the budgeted funding obtained 90% - 100% of that required?	NO					
3.3 (a)	Does the agency carry out asset valuation?	YES			0	1	2
3.3 (b)	If the agency carries our asset valuation, is the value of the agency's road asset decreasing?	NO				1	
3.3 ©	If the agency carries our asset valuation, is the value of the agency's road asset stable?	NO					
3.3 (d)	If the agency carries our asset valuation, is the value of the agency's road asset increasing?	NO					
3.4 (a)	Is the percentage of the maintenance funding obtained ≥ 0.1% of the asset value of the road network?	YES			0	1	2
3.4 (b)	Is the percentage of the maintenance funding obtained ≥ 0.5% of the asset value of the road network?	YES				1	
3.4 ©	Is the percentage of the maintenance funding obtained ≥ 1 % of the asset value of the road network?	NO					
3.4 (d)	Is the percentage of the maintenance funding obtained ≥ 1.5 % of the asset value of the road network?	NO					

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
3.5 (a)	Does the agency carry out annual and multi-annual financial forecasting for maintenance and rehabilitation works?	YES			0	1	3
3.5 (b)	Are the financial forecasts for maintenance works and rehabilitation works based on current Asset Management Plan (AMP) outputs?	YES				1	
3.5 (c)	Are the financial forecasts for maintenance works based on current comprehensive AMPs with reasoned supporting assumptions?	YES				1	
3.5 (d)	Are the financial forecasts for maintenance and rehabilitation works based on current comprehensive advanced AMPs with detailed supporting assumptions and high confidence in accuracy?	NO					
3.6 (a)	Does the agency operate an accounting system?	YES		1	4	1	3
3.6 (b)	Are the annual accounts finalised within the first quarter of the following year?	YES		1		1	
3.6 (c)	Are the accounts audited annually?	YES		1		1	
3.6 (d)	Are the accounts published annually?	NO	UNRA reports sent to ministry as per UNRA Act	1			

**BUILDING BLOCK 4: MANAGERIAL**

Key objective: Successful implementation of road asset preservation practice through support of the district executives, an adequate organisational structure, adequate number of trained staff

Element: Network management

Issue:

- Use of appropriate AM system that contains:
  - Network definition (road and bridge inventory information),
  - Network condition (roads and bridges)
  - Network usage (traffic)
  - Financial/cost information on works activities
  - Storage, update, analysis and reporting of data collected
- Appropriate levels of service and intervention standards that determine gaps in network performance?
- Prioritised annual, medium (3- 5yrs) and long term ( > 5 yrs) maintenance and development plans and related investment plans?
- A risk management strategy (for unfunded works);
- Annual reporting on the overall management of the road asset (AM plan);
- Demand forecasting.

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
4.1 (a)	Does the roads agency have an AM system(s) in place which can store current and historical asset inventory, condition and asset utilization data (e.g. traffic)?	YES		1	1	1	1
4.1 (b)	Does the AM system enable treatment cost and historical maintenance information to be stored and accessed?	NO					
4.1 (c)	Does the AM system allow for the comparison of the current condition of assets with intervention levels to determine maintenance requirements?	NO					

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
4.1 (d)	Can the AM system facilitate the prioritisation of road sections requiring maintenance?	NO					
4.2 (a)	Has the road agency developed intervention levels for all its principal asset types which require periodic maintenance (carriageway, shoulders, bridges, culverts)?	YES			0	1	2
4.2 (b)	Are the intervention levels directly associated with defined levels of service?	YES				1	
4.2 (c)	Have the intervention levels been determined using an economic analysis.	NO					
4.2 (d)	Have the intervention levels been determined using socio-economic-political (i.e. multi-criteria) analysis?	NO					
4.3 (a)	Does the agency produce annual maintenance and development plans?	YES		1	3	1	3
4.3 (b)	Does the agency produce annual prioritised maintenance and development plans?	YES		1		1	
4.3 (c)	Does the agency provide prioritised medium term (3-5 year) maintenance plans?	YES		1		1	
4.3 (d)	Does the agency provide prioritised long term (> 5 year)	NO					
4.4 (a)	Does the agency keep records of maintenance and rehabilitation work activities?	YES		1	2	1	3
4.4 (b)	Is maintenance and rehabilitation planned and prioritised according to asset condition?	YES		1		1	
4.4 (c)	Is maintenance and rehabilitation prioritised using a cost benefit approach?	YES				1	
4.4 (d)	Is maintenance and rehabilitation expenditure prioritised using techniques which consider economic and social benefit?	NO					
4.5 (a)	Does the agency keep a record of maintenance works backlog?	YES		1	1	1	3
4.5 (b)	Does the agency have a strategy to reduce maintenance backlog based on a percentage of the available development budget?	YES				1	
4.5 (c)	Does the agency prioritise the reduction of maintenance backlog using an economic analysis process?	YES				1	
4.5 (d)	Does the agency prioritise the reduction of maintenance backlog using risk management techniques?	NO					
4.6 (a)	Does the agency carry out basic demand (traffic) forecasting?	YES			0	1	2
4.6 (b)	Are the forecasts of traffic demand based on traffic counts carried out in the last 5 years using robust economic indicators (e.g. GDP)?	YES				1	
4.6 (c)	Is traffic demand forecast based on mathematical analysis of historical trends?	NO					
4.6 (d)	Are primary economic factors used when forecasting demand?	NO					
4.7 (a)	Does the agency schedule capital projects using staff judgement, taking into consideration government policy and political drivers?	YES		1	2	1	3
4.7 (b)	Are projects identified using input from operational staff, estimates of service lives, traffic demand modelling and accident analysis?	YES		1		1	

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
4.7 ©	Are major capital projects for the next 10 years identified and prioritised taking into account socio-political-economic requirements?	YES			2	1	3
4.7 (d)	Does the agency use advanced formalised socio-economic-political decision making techniques to identify major capital expenditure?	NO	System under development				

### BUILDING BLOCK 5: TECHNICAL

Key objective: Identification and description of road assets including inventory, condition data and performance monitoring; and availability of data to network managers.

Element: Road network database

Issue:

- Existence of a road referencing system;
- Existence of a classified road inventory;
- Standard procedures for developing a road inventory, data collection and performance monitoring;
- Use of asset register to store all road asset information.

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
5.1 (a)	Does the agency have a road referencing system based on routes and nodes between centres of population?	YES		1		1	
5.1 (b)	Is the road referencing system based on road sections (< 1 km) with homogeneous characteristics?	YES		1	4	1	3
5.1 (c)	Is the road referencing system based on sub-sections (homogenous sections of 200 m lengths)?	NO		1			
5.1 (d)	Is the road referencing system GIS based?	YES		1		1	
5.2 (a)	Does the agency have an item inventory recording basic road surface types (earth, gravel or sealed)?	YES		1		1	
5.2 (b)	Does the agency undertake an inventory of all principal assets (carriageway, shoulders, bridges, culverts, side drains)?	YES		1	2	1	2
5.2 (c)	Does the inventory include the service lives of all principal assets?	NO					
5.2 (d)	Does the agency have deterioration models for all principal assets?	NO					
5.3 (a)	Is the road inventory based on assumptions or incomplete data?	YES		1		1	
5.3 (b)	Is there a system of systematic and documented data collection for all principal assets (carriageway, shoulders, bridges, culverts, side drains) on a road by road basis?	YES		1		1	
5.3 (c)	Is there an established system of systematic and documented data collection for all principal assets (carriageway, shoulders, bridges, culverts, side drains) on a section basis?	NO			2		2

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
5.3 (d)	Is there an established system of systematic and documented data collection for all principal assets on a sub-section basis?	NO					
5.4 (a)	Does the agency carry out annual visual condition assessment surveys for carriageways, shoulders of gravel and earth roads?	YES		1	1	1	3
5.4 (b)	Are the visual condition assessments of gravel and earth carried out in accordance with well documented, standardised procedures?	YES				1	
5.4 (c)	Does the agency measure gravel loss?	NO					
5.4 (d)	Are the results of the gravel and earth road condition assessment recorded in a computerised AM system?	YES				1	
5.5 (a)	Does the agency estimate asset utilization (traffic) on its network?	YES		1	1	1	4
5.5 (b)	Does the agency measure asset utilization (traffic) annually on its major roads?	YES				1	
5.5 (c)	Does the agency project asset utilization across its network from annual measures of utilization of a sampled number of roads	YES				1	
5.5 (d)	Does the agency assess bottlenecks on its network?	YES				1	

**BUILDING BLOCK 6: OPERATIONAL**

Key objective: Efficient operations at district level including planning and scheduling of maintenance, procurement of service providers and technical compliance.

Element: Procurement of services

Issue:

- Appropriate type of contract;
- Outsourcing of strategic, non-core activities;
- Maintenance scheduling of works;
- Auditing of maintenance works.

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
6.1 (a)	Are service delivery roles within the agency clearly allocated?	YES		1	3	1	3
6.1 (b)	Does the agency have provision for outsourcing of non-core activities?	YES		1		1	
6.1 (c)	Are competitive tendering practices used?	YES		1		1	
6.1 (d)	Are service delivery mechanisms reviewed annually to identify risks, benefits and costs of various outsourcing options?	NO					
6.2 (a)	Does the agency plan day to day maintenance activities?	YES			0	1	3
6.2 (b)	Are the needs of stakeholders considered when scheduling day to day maintenance?	YES				1	
6.2 ©	Is the planning of day to day maintenance optimised in terms of the availability and use of resources?	YES				1	
6.2 (d)	Is day to day planning of maintenance optimised by considering the availability of resources and impacts on road users?	NO					

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
6.3 (a)	Does the agency prepare day to day reports on road maintenance activities?	YES			0	1	2
6.3 (b)	Does the agency prepare weekly reports on road maintenance activities?	YES				1	
6.4 (a)	Does the agency undertake technical audits of designs?	YES		1	2	1	2
6.4 (b)	Does the agency regularly undertake technical audits of maintenance, construction and rehabilitation works?	NO		1			
6.4 (c)	Does the agency provide guidelines for undertaking the road audits?	YES				1	
6.4 (d)	Does the RA require service suppliers to be ISO 9000 certified?	NO					

## AFCAP GEM - RURAL ROAD SECTOR SUSTAINABILITY ASSESSMENT (NOV 2017): UGANDA - UNRA

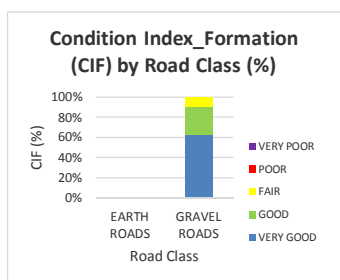
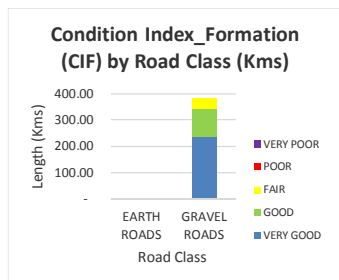
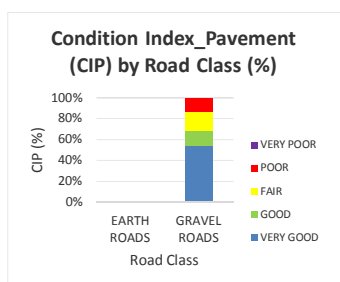
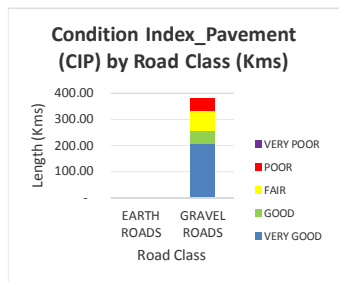
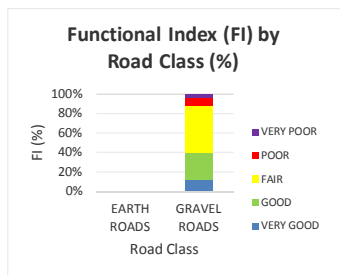
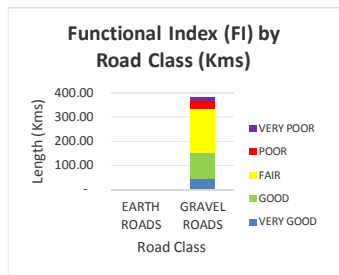
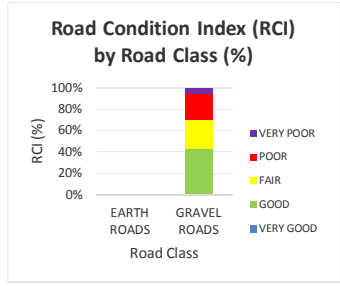
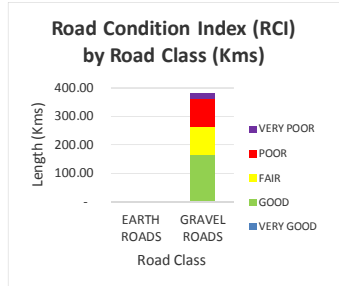
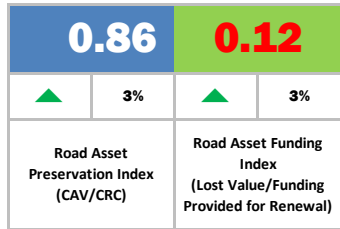
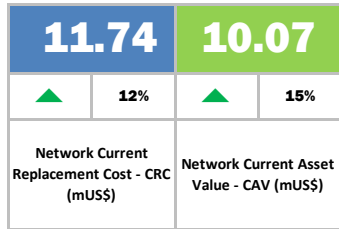
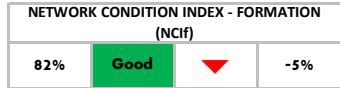
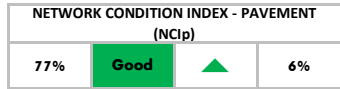
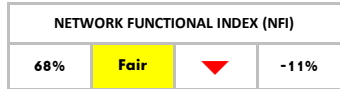
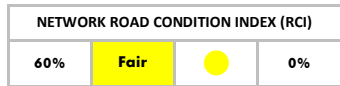
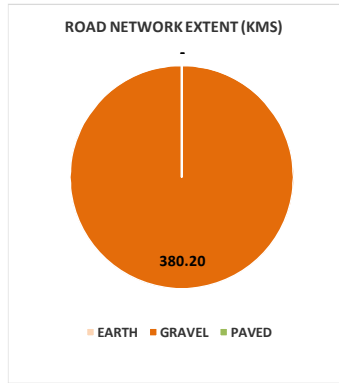
## MEASURABLE DATA

Building Block	Data Item	Unit	Benchmark	2016	May 2017 (Baseline)	Oct-17
External	Stakeholder communication tools available	No.		1	2	2
	Meetings with stakeholders - pre budget	No.		1	1	1
	Council meetings - strategy	No.		0	0	0
	Council meetings - budget approval	No.		1	1	1
	Meetings with stakeholders - post budget	No.		0	0	0
Institutional	Total establishment - engineers + technicians	No.		40	40	40
	Vacancies - engineers + technicians	No.		20	20	20
	Planned training programmes	No.		5	5	5
	Training courses undertaken	No.		2	2	2
	Station Engineer salary as % of private sector	%		110%	120%	120%
Financial	Estimated project road network asset value	mUS\$		15.5	15.5	15.5
	Total requirements - routine maintenance	mUS\$		not known	not known	not known
	Total requirements - periodic maintenance	mUS\$		not known	not known	not known
	Total requirements - rehabilitation/reconstruction	mUS\$		not known	not known	not known
	Total requirements - development	mUS\$		not known	not known	not known
	Budget - routine maintenance	mUS\$		not known	not known	not known
	Budget - periodic maintenance	mUS\$		not known	not known	not known
	Budget - rehabilitation/reconstruction	mUS\$		not known	not known	not known
	Budget - development	mUS\$		not known	not known	not known
	Funding - Road fund	mUS\$		40.000	50.000	50.000
	Funding - Council funds	mUS\$		not known	not known	not known
	Funding - Donors	mUS\$		not known	not known	not known
	Funding - Others	mUS\$		not known	not known	not known
Managerial	Cost of asset management system	US\$		not known	not known	not known
	Annual maintenance cost of AM system	US\$		not known	not known	not known
	Network under routine maintenance	Kms		not known	not known	not known
	Network under routine maintenance as % of total	%		not known	not known	not known
	Network under periodic maintenance	Kms		not known	not known	not known
	Network under periodic maintenance as % of total	%		not known	not known	not known
	Network under rehabilitation	Kms		not known	not known	not known
	Network under rehabilitation as % of total	%		not known	not known	not known
	Network upgrading	Kms		not known	not known	not known
	Network upgrading as % of total	%		not known	not known	not known
	Network planned for periodic next 3 yrs	Kms		not known	not known	not known
	Network planned for rehabilitation next 3 yrs	Kms		not known	not known	not known
	Network planned for upgrading next 3 yrs	Kms		not known	not known	not known
Technical	Total network length in GEM project district	Kms		1000	1000	1000
	Project network length	Kms		300	300	300
	Network length - engineered/gravelled	Kms		50	50	50
	Network length - non-engineered	Kms		50	50	50
	No of culverts - pipes			not known	500	500
	No of culverts - box			not known	25	25
	No of low level drifts			not known	5	5
	No of bridges			not known	2	2
	No of structures inspected			not known	532	532
	No of visual inspection cycles - road			not known	1	1
	No of vehicle counts			not known	nil	nil
	% Network - Very Good			not known	0	0
	% Network - Good			not known	10	10
	% Network - Fair			not known	25	25
	% Network - Poor			not known	25	25
	% Network - Very Poor			not known	40	40
	% Culverts - Very Good			not known	5	5
	% Culverts - Good			not known	50	50
	% Culverts - Fair			not known	20	20
	% Culverts - Poor			not known	15	15
	% Culverts - Very Poor			not known	10	10
	% Bridges - Very Good			not known	5	5

Economic Growth through Effective Road Asset Management

Building Block	Data Item	Unit	Benchmark	2016	May 2017 (Baseline)	Oct-17
	% Bridges - Good			not known	30	30
	% Bridges - Fair			not known	30	30
	% Bridges - Poor			not known	30	30
	% Bridges - Very Poor			not known	5	5
	No of impassable points - > 2 days closed			not known	10	10
Operational	No of graders			none	none	none
	No of tractors			none	none	none
	No of water bowsers			none	none	none
	No of tippers			none	none	none
	No of pedestrican rollers			none	none	none
	No of self propelled rollers			none	none	none
	Average annual utilisation rate - graders	%		not known	not known	not known
	No of roads supervisors			1	1	1
	No of foremen			3	3	3
	No of skilled and semi-skilled workers			not known	not known	not known
	Total man-days of labor utilised			not known	not known	not known
	No of roadworks tenders			not known	not known	not known
	No of contracts awarded			not known	not known	not known
	No of technical audits			nil	nil	nil

**AFCAP GEM PROJECT: UGANDA - UNRA Jinja Station (2017)**  
**ROAD CONDITION AND ASSET VALUE DASHBOARD**



**AFCAP GEM PROJECT: UGANDA - UNRA Jinja Station (2017)**  
**ROAD CONDITION AND ASSET VALUE TABLES**

**ROAD NETWORK EXTENT**

TYPE	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
EARTH	111.50	-	-	-	-	-	29%	0%	0%	0%	0%	0%
GRAVEL	268.70	380.20	380.20	380.20	380.20	380.20	71%	100%	100%	100%	100%	100%
PAVED	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
<b>TOTAL</b>	<b>380.20</b>	<b>380.20</b>	<b>380.20</b>	<b>380.20</b>	<b>380.20</b>	<b>380.20</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**ROAD CONDITION INDEX (RCI) BY YEAR**

	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
GOOD	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
FAIR	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
POOR	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
VERY POOR	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
<b>TOTAL</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0%</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>

	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
GOOD	163.50	163.50	163.50	163.50	163.50	163.50	43%	43%	43%	43%	43%	43%
FAIR	100.00	100.00	100.00	100.00	100.00	100.00	26%	26%	26%	26%	26%	26%
POOR	96.20	96.20	96.20	96.20	96.20	96.20	25%	25%	25%	25%	25%	25%
VERY POOR	20.50	20.50	20.50	20.50	20.50	20.50	5%	5%	5%	5%	5%	5%
<b>TOTAL</b>	<b>-</b>	<b>380.20</b>	<b>380.20</b>	<b>380.20</b>	<b>380.20</b>	<b>380.20</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**FUNCTIONAL INDEX (FI) BY YEAR**

	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	51.60	-	-	-	-	-	46%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
GOOD	49.40	-	-	-	-	-	44%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
FAIR	10.50	-	-	-	-	-	9%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
POOR	-	-	-	-	-	-	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
VERY POOR	-	-	-	-	-	-	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
<b>TOTAL</b>	<b>111.50</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>100%</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>

	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	46.00	42.00	42.00	42.00	42.00	42.00	17%	11%	11%	11%	11%	11%
GOOD	176.20	109.70	109.70	109.70	109.70	109.70	67%	29%	29%	29%	29%	29%
FAIR	39.50	180.80	180.80	180.80	180.80	180.80	15%	48%	48%	48%	48%	48%
POOR	2.00	31.20	31.20	31.20	31.20	31.20	1%	8%	8%	8%	8%	8%
VERY POOR	-	16.50	16.50	16.50	16.50	16.50	0%	4%	4%	4%	4%	4%
<b>TOTAL</b>	<b>263.70</b>	<b>380.20</b>	<b>380.20</b>	<b>380.20</b>	<b>380.20</b>	<b>380.20</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**PAVEMENT CONDITION INDEX (PCI) BY YEAR**

	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	-	-	-	-	-	-	-	-	-	-	-	-
GOOD	-	-	-	-	-	-	-	-	-	-	-	-
FAIR	-	-	-	-	-	-	-	-	-	-	-	-
POOR	-	-	-	-	-	-	-	-	-	-	-	-
VERY POOR	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTAL</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>

	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	57.00	204.50	204.50	204.50	204.50	204.50	22%	54%	54%	54%	54%	54%
GOOD	48.70	52.20	52.20	52.20	52.20	52.20	18%	14%	14%	14%	14%	14%
FAIR	127.00	73.50	73.50	73.50	73.50	73.50	48%	19%	19%	19%	19%	19%
POOR	31.00	50.00	50.00	50.00	50.00	50.00	12%	13%	13%	13%	13%	13%
VERY POOR	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
<b>TOTAL</b>	<b>263.70</b>	<b>380.20</b>	<b>380.20</b>	<b>380.20</b>	<b>380.20</b>	<b>380.20</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**FORMATION CONDITION INDEX (FCI) BY YEAR**

	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	99.90	-	-	-	-	-	90%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
GOOD	6.60	-	-	-	-	-	6%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
FAIR	5.00	-	-	-	-	-	4%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
POOR	-	-	-	-	-	-	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
VERY POOR	-	-	-	-	-	-	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
<b>TOTAL</b>	<b>111.50</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>100%</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>

	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	146.50	236.50	236.50	236.50	236.50	236.50	56%	62%	62%	62%	62%	62%
GOOD	57.20	106.00	106.00	106.00	106.00	106.00	22%	28%	28%	28%	28%	28%
FAIR	60.00	37.70	37.70	37.70	37.70	37.70	23%	10%	10%	10%	10%	10%
POOR	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
VERY POOR	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
<b>TOTAL</b>	<b>263.70</b>	<b>380.20</b>	<b>380.20</b>	<b>380.20</b>	<b>380.20</b>	<b>380.20</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**NETWORK CONDITION INDICES BY YEAR**

	PERCENT					
2016 - BASELINE	2017	2018	2019	2020	2021	

## AFCAP GEM PROJECT: UGANDA - UNRA Jinja Station (2017)

## ROAD CONDITION AND ASSET VALUE TABLES

NETWORK RCI	60%	60%	60%	60%	60%	60%
% MOVE		0%				
NETWORK FI	79%	68%	68%	68%	68%	68%
% MOVE		-11%				
NETWORK CIP	71%	77%	77%	77%	77%	77%
% MOVE		6%				
NETWORK CIF	87%	82%	82%	82%	82%	82%
% MOVE		-5%				

## ASSET PRESERVATION NEEDS BY YEAR

	MIL US\$						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
ROUTINE	0.76	0.76	0.76	0.76	0.76	0.76	29%	46%	46%	46%	46%	46%
% MOVE		0%						17%				
PERIODIC	1.52	0.88	0.88	0.88	0.88	0.88	58%	54%	54%	54%	54%	54%
% MOVE								-4%				
UPGRADING	0.33	-	-	-	-	-	13%	0%	0%	0%	0%	0%
REHABILITATION	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
<b>TOTAL</b>	<b>2.62</b>	<b>1.64</b>	<b>1.64</b>	<b>1.64</b>	<b>1.64</b>	<b>1.64</b>						

## BUDGET BY YEAR

	MIL US\$						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
ROUTINE	0.10	0.10	0.10	-	-	-	25%	25%	25%	0%	0%	0%
% MOVE								0%				
PERIODIC	0.10	0.10	0.10	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	0%	0%	0%
% MOVE								#DIV/0!				
UPGRADING	0.10	0.10	0.10	-	-	-	#VALUE!	0%	0%	0%	0%	0%
REHABILITATION	0.10	0.10	0.10	-	-	-	100%	100%	100%	0%	0%	0%
<b>TOTAL</b>	<b>0.40</b>	<b>0.40</b>	<b>0.40</b>	<b>-</b>	<b>-</b>	<b>-</b>						

## ACTUAL EXPENDITURE BY YEAR

	MIL US\$						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
ROUTINE	0.10	0.10	0.10	-	-	-	25%	25%	25%	#DIV/0!	#DIV/0!	#DIV/0!
PERIODIC	0.10	0.10	0.10	-	-	-	25%	25%	25%	#DIV/0!	#DIV/0!	#DIV/0!
UPGRADING	0.10	0.10	0.10	-	-	-	25%	25%	25%	#DIV/0!	#DIV/0!	#DIV/0!
REHABILITATION	0.10	0.10	0.10	-	-	-	25%	25%	25%	#DIV/0!	#DIV/0!	#DIV/0!
<b>TOTAL</b>	<b>0.40</b>	<b>0.40</b>	<b>0.40</b>	<b>-</b>	<b>-</b>	<b>-</b>						

## ASSET VALUATION BY YEAR

	MIL US\$/KMS					
	2016 - BASELINE	2017	2018	2019	2020	2021
CURRENT REPLACEMENT COST	10.44	11.74	11.74	11.74	11.74	11.74
% MOVE		12%				
THRESHOLD VALUE REQUIRED	7.31	8.22	8.22	8.22	8.22	8.22
DEPRECIATED REMAINING VALUE	8.72	10.07	10.07	10.07	10.07	10.07
% MOVE		15%				
DEPRECIATED/LOST VALUE	1.72	1.67	1.67	1.67	1.67	1.67
LENGTH < THRESHOLD VALUE (KMS)		5.00	5.00	5.00	5.00	5.00

## ASSET SUSTAINABILITY RATIOS AND INDICES

	2016 - BASELINE	2017	2018	2019	2020	2021
Road Asset Preservation Index	0.84	0.86	0.86	0.86	0.86	0.86
% MOVE		3%	0%			
Road Asset Preservation Funding Index	0.12	0.12	0.12	-	-	-
% MOVE		3%	0%			

**AFCAP GEM PROJECT: UGANDA - UNRA Jinja Station (2017)**  
**ASSET VALUE CALCULATION**

BASIC INFORMATION ON ROAD AND SECTIONS										CURRENT REPLACEMENT COST						EXPECTED THRESHOLD VALUE						CURRENT ASSET VALUE						ANALYSIS				
GEM Road No.	Road No.	Road Name	Road Type	Segment No.	Start Km	End Km	Length (km)	Expected Useful Life - EUL (Yrs)		Gravel Road Cost/Km (\$)	CRC Cost/km: Formation (\$)	CRC Cost/km: Pavement (\$)	Formation CRC Cost (\$)	Pavement CRC Cost (\$)	Current Replacement Cost (\$)	Min. Threshold Condition - Rating		Remaining Useful Life (RUL) at Threshold Condition (Yrs)		Depreciated Remaining Cost (DRC) at Threshold Condition (\$)		Asset Value at Threshold Condition (\$)	Current Condition Rating		Remaining Useful Life (RUL) at Current Condition (Yrs)		Depreciated Remaining Cost (DRC) at Current Condition (\$)		Current Asset Value (\$)	Current Asset Value as % of CRC	Current Asset Value as % of Min Threshold Value	Roads with Condition Less than Permissible (Kms)
								Formation	Pavement							Formation	Pavement	Formation	Pavement	Formation	Pavement		Formation	Pavement	Formation	Pavement	Formation	Pavement				
1	0	Iganga - Kamuli	Gravel	1	+0	5+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Very Good	47.5	6.7	71 250.00	71 250.00	142 500.00	95%	136%	
1	0	Iganga - Kamuli	Gravel	2	5+000	10+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Very Good	47.5	6.7	71 250.00	71 250.00	142 500.00	95%	136%	
1	0	Iganga - Kamuli	Gravel	3	10+000	15+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Very Good	47.5	6.7	71 250.00	71 250.00	142 500.00	95%	136%	
1	0	Iganga - Kamuli	Gravel	4	15+000	20+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Very Good	47.5	6.7	71 250.00	71 250.00	142 500.00	95%	136%	
1	0	Iganga - Kamuli	Gravel	5	20+000	25+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Very Good	47.5	6.7	71 250.00	71 250.00	142 500.00	95%	136%	
1	0	Iganga - Kamuli	Gravel	6	25+000	30+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Very Good	47.5	6.7	71 250.00	71 250.00	142 500.00	95%	136%	
1	0	Iganga - Kamuli	Gravel	7	30+000	35+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Very Good	47.5	6.7	71 250.00	71 250.00	142 500.00	95%	136%	
1	0	Iganga - Kamuli	Gravel	8	35+000	40+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Very Good	47.5	6.7	71 250.00	71 250.00	142 500.00	95%	136%	
1	0	Iganga - Kamuli	Gravel	9	40+000	45+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Very Good	47.5	6.7	71 250.00	71 250.00	142 500.00	95%	136%	
1	0	Iganga - Kamuli	Gravel	10	45+000	50+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Very Good	47.5	6.7	71 250.00	71 250.00	142 500.00	95%	136%	
1	0	Iganga - Kamuli	Gravel	11	50+000	55+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Very Good	47.5	6.7	71 250.00	71 250.00	142 500.00	95%	136%	
1	0	Iganga - Kamuli	Gravel	12	55+000	57+000	2.00	50	7	45 000.00	20 250.00	24 750.00	40 500.00	49 500.00	90 000.00	Fair	Fair	35.0	4.9	28 350.00	34 650.00	63 000.00	Very Good	Very Good	47.5	6.7	38 475.00	47 025.00	85 500.00	95%	136%	
2	0	Kamuli - Bukungu	Gravel	1	+0	5+000	5.00	50	7	45 000.00	20 250.00	24 750.00	101 250.00	123 750.00	225 000.00	Fair	Fair	35.0	4.9	70 875.00	86 625.00	157 500.00	Very Good	Poor	47.5	3.5	96 187.50	61 875.00	158 062.50	70%	100%	
2	0	Kamuli - Bukungu	Gravel	2	5+000	10+000	5.00	50	7	45 000.00	20 250.00	24 750.00	101 250.00	123 750.00	225 000.00	Fair	Fair	35.0	4.9	70 875.00	86 625.00	157 500.00	Very Good	Poor	47.5	3.5	96 187.50	61 875.00	158 062.50	70%	100%	
2	0	Kamuli - Bukungu	Gravel	3	10+000	15+000	5.00	50	7	45 000.00	20 250.00	24 750.00	101 250.00	123 750.00	225 000.00	Fair	Fair	35.0	4.9	70 875.00	86 625.00	157 500.00	Very Good	Poor	47.5	3.5	96 187.50	61 875.00	158 062.50	70%	100%	
2	0	Kamuli - Bukungu	Gravel	4	15+000	20+000	5.00	50	7	45 000.00	20 250.00	24 750.00	101 250.00	123 750.00	225 000.00	Fair	Fair	35.0	4.9	70 875.00	86 625.00	157 500.00	Very Good	Poor	47.5	3.5	96 187.50	61 875.00	158 062.50	70%	100%	
2	0	Kamuli - Bukungu	Gravel	5	20+000	25+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Poor	47.5	3.5	71 250.00	37 500.00	108 750.00	73%	104%	
2	0	Kamuli - Bukungu	Gravel	6	25+000	30+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Poor	47.5	3.5	71 250.00	37 500.00	108 750.00	73%	104%	
2	0	Kamuli - Bukungu	Gravel	7	30+000	35+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Very Good	47.5	6.7	71 250.00	71 250.00	142 500.00	95%	136%	
2	0	Kamuli - Bukungu	Gravel	8	35+000	40+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Very Good	47.5	6.7	71 250.00	71 250.00	142 500.00	95%	136%	
2	0	Kamuli - Bukungu	Gravel	9	40+000	45+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Very Good	47.5	6.7	71 250.00	71 250.00	142 500.00	95%	136%	
2	0	Kamuli - Bukungu	Gravel	10	45+000	50+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Very Good	47.5	6.7	71 250.00	71 250.00	142 500.00	95%	136%	
2	0	Kamuli - Bukungu	Gravel	11	50+000	55+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Very Good	47.5	6.7	71 250.00	71 250.00	142 500.00	95%	136%	
2	0	Kamuli - Bukungu	Gravel	12	55+000	60+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Very Good	47.5	6.7	71 250.00	71 250.00	142 500.00	95%	136%	
2	0	Kamuli - Bukungu	Gravel	13	60+000	65+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Very Good	Very Good	47.5	6.7	71 250.00	71 250.00	142 500.00	95%	136%	
2	0	Kamuli - Bukungu	Gravel	14	65+000	67+000	2.00	50	7	30 000.00	15 000.00	15 000.00	30 000.00	30 000.00	60 000.00	Fair	Fair	35.0	4.9	21 000.00	21 000.00	42 000.00	Very Good	Very Good	47.5	6.7	28 500.00	28 500.00	57 000.00	95%	136%	
3	0	Kamuli - Namasagali	Gravel	1	+0	5+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Good	Poor	42.5	3.5	63 750.00	37 500.00	101 250.00	68%	96%	5.00
3	0	Kamuli - Namasagali	Gravel	2	5+000	10+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Good	Fair	42.5	4.9	63 750.00	52 500.00	116 250.00	78%	111%	
3	0	Kamuli - Namasagali	Gravel	3	10+000	15+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Good	Good	42.5	6.0	63 750.00	63 750.00	127 500.00	85%	121%	
3	0	Kamuli - Namasagali	Gravel	4	15+000	20+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Good	Good	42.5	6.0	63 750.00	63 750.00	127 500.00	85%	121%	
3	0	Kamuli - Namasagali	Gravel	5	20+000	22+000	2.00	50	7	30 000.00	15 000.00	15 000.00	30 000.00	30 000.00	60 000.00	Fair	Fair	35.0	4.9	21 000.00	21 000.00	42 000.00	Fair	Good	35.0	6.0	21 000.00	25 500.00	46 500.00	78%	111%	
4	0	Nabirunda - Kidera	Gravel	1	+0	5+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Good	Fair	42.5	4.9	63 750.00	52 500.00	116 250.00	78%	111%	
4	0	Nabirunda - Kidera	Gravel	2	5+000	10+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	70%	100%	
4	0	Nabirunda - Kidera	Gravel	3	10+000	15+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Good	Fair	42.5	4.9	63 750.00	52 500.00	116 250.00	78%	111%	
4	0	Nabirunda - Kidera	Gravel	4	15+000	20+000	5.00	50	7	30 000.00	15 000.00	15 000.00	75 000.00	75 000.00	150 000.00	Fair	Fair	35.0	4.9	52 500.00	52 500.00	105 000.00	Good	Fair								

## AFCAP GEM PROJECT: UGANDA - UNRA Jinja Station (2017)

### ASSET VALUATION DATA

**Expected Useful Life**

Gravel Pavement	7 years
Formation	50 yrs

**Costs per Km**

Total CRC/Km Gravel Road	30 000.00
Formation	50% 15 000.00 US\$
Gravel Pavement	50% 15 000.00 US\$
Routine Maintenance	2 000.00 US\$
Periodic Maintenance - Regravel	12 000.00 US\$
Rehabilitation	18 000.00 US\$
Upgrading	15 000.00 US\$

**Min Threshold Conditions**

Gravel Layer	Fair
Formation	Fair

**Road Maintenance and Development Needs Parameters**

	2016 Baseline	2017	2018	2019	2020	2021
% of Network to Maintain	100%	100%	100%	100%	100%	100%
% of Fair for Periodic	100%	100%	100%	100%	100%	100%
% of Poor and V.Poor for Rehab	50%	50%	50%	50%	50%	50%
% of Earth Roads to Upgrade	20%	20%	20%	20%	20%	20%

**Costs per Km (Actual)**

Routine Maintenance	85.00 US\$
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**Budget History (million US\$)**

	2016 Baseline	2017	2018	2019	2020	2021
Routine Maintenance	0.10	0.10	0.10			
Periodic Maintenance	0.10	0.10	0.10			
Upgrading	0.10	0.10	0.10			
Rehabilitation	0.10	0.10	0.10			
<b>Total</b>	<b>0.40</b>	<b>0.40</b>	<b>0.40</b>	-	-	-

**Actual Expenditure (million US\$)**

	2016 Baseline	2017	2018	2019	2020	2021
Routine Maintenance	0.10	0.10	0.10			
Periodic Maintenance	0.10	0.10	0.10			
Upgrading	0.10	0.10	0.10			
Rehabilitation	0.10	0.10	0.10			
<b>Total</b>	<b>0.40</b>	<b>0.40</b>	<b>0.40</b>	-	-	-

AFCAP GEM PROJECT: UGANDA - UNRA Jinja Station (2017)

ROAD FUNCTIONALITY AND CONDITION INDICES

D - DEGREE/SEVERITY		E - DEFECT EXTENT/OCCURRENCE/QUANTITY																		CONDITION RATING CRITERIA																					
1. Slight 2. Slight to Warning 3. Warning 4. Warning to Severe 5. Severe		% of length: 1. <5% 2. 5-10% 3. 10-25% 4. 25-50% 5 >50%																		Very Poor: <30% Poor: 30-50% Fair: 50-70% Good: 70-85% Very Good: >85%																					
GEM Road No	Road No	Road Name	Road Type	Segment No.	Start Km	End Km	Length (km)	Gravel Loss		Usable Width		Erosion C-Way		Erosion S/Drains		Potholes		Corrugation		Rutting		Impassability		Road Condition Index - RCI (%)				Functionality Index - FI (%)				Condition Index - Pavement - CIP (%)				Condition Index - Formation - CIF (%)					
								D	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	Segment CI	Segment CI Rating	RCI	RCI Rating	Segment FI	Segment FI Rating	Road FI	Road FI Rating	Segment CIP	Segment CIP Rating	Road CIP	Road CIP Rating	Segment CIF	Segment CIF Rating
1		Iganga - Kamuli	Gravel	1	+0	5+000	5.00	1	1	1	1	1	3	1	1	1	1	1	2	2	2	2	1	1	83.0	Good	73.3	Good	88.3	Very Good	70.9	Good	96.4	Very Good	96.4	Very Good	87.4	Very Good	80.8	Good	
1		Iganga - Kamuli	Gravel	2	5+000	10+000	5.00	1	1	1	1	3	3	2	2	1	1	1	2	2	2	2	1	4	71.7	Good	73.3	Good	67.3	Fair	70.9	Good	96.4	Very Good	96.4	Very Good	87.4	Very Good	81.9	Good	
1		Iganga - Kamuli	Gravel	3	10+000	15+000	5.00	1	1	1	1	3	3	2	2	1	1	1	2	2	2	3	1	1	71.3	Good	73.3	Good	68.1	Fair	70.9	Good	96.4	Very Good	96.4	Very Good	87.4	Very Good	80.8	Good	
1		Iganga - Kamuli	Gravel	4	15+000	20+000	5.00	1	1	1	1	3	3	2	2	1	1	1	2	2	2	2	1	1	72.1	Good	73.3	Good	68.3	Fair	70.9	Good	96.4	Very Good	96.4	Very Good	87.4	Very Good	80.8	Good	
1		Iganga - Kamuli	Gravel	5	20+000	25+000	5.00	1	1	1	1	3	3	2	2	1	1	1	2	2	2	2	1	1	71.3	Good	73.3	Good	68.1	Fair	70.9	Good	96.4	Very Good	96.4	Very Good	87.4	Very Good	84.1	Good	
1		Iganga - Kamuli	Gravel	6	25+000	30+000	5.00	1	1	1	1	3	3	2	2	1	1	1	2	2	2	2	3	1	1	70.9	Good	73.3	Good	67.1	Fair	70.9	Good	96.4	Very Good	96.4	Very Good	87.4	Very Good	84.1	Good
1		Iganga - Kamuli	Gravel	7	30+000	35+000	5.00	1	1	1	1	3	3	2	2	1	1	1	2	2	2	2	3	1	1	70.7	Good	73.3	Good	66.8	Fair	70.9	Good	96.4	Very Good	96.4	Very Good	87.4	Very Good	84.1	Good
1		Iganga - Kamuli	Gravel	8	35+000	40+000	5.00	1	1	1	1	3	3	2	2	1	1	1	1	3	2	3	1	1	71.1	Good	73.3	Good	67.5	Fair	70.9	Good	96.4	Very Good	96.4	Very Good	87.4	Very Good	84.1	Good	
1		Iganga - Kamuli	Gravel	9	40+000	45+000	5.00	1	1	1	1	2	3	2	2	1	1	1	1	2	2	3	1	1	76.3	Good	73.3	Good	78.1	Good	70.9	Good	96.4	Very Good	96.4	Very Good	87.4	Very Good	83.0	Good	
1		Iganga - Kamuli	Gravel	10	45+000	50+000	5.00	1	1	1	1	3	3	2	2	1	1	1	1	3	2	3	1	1	71.1	Good	73.3	Good	67.5	Fair	70.9	Good	96.4	Very Good	96.4	Very Good	87.4	Very Good	87.4	Very Good	
1		Iganga - Kamuli	Gravel	11	50+000	55+000	5.00	1	1	1	1	2	3	2	2	2	2	2	2	3	2	3	1	1	74.7	Good	73.3	Good	68.9	Fair	70.9	Good	96.4	Very Good	96.4	Very Good	87.4	Very Good	87.4	Very Good	
1		Iganga - Kamuli	Gravel	12	55+000	57+000	2.00	1	1	1	1	2	3	2	2	1	1	1	2	2	3	2	3	1	1	75.3	Good	73.3	Good	75.8	Good	70.9	Good	96.4	Very Good	96.4	Very Good	87.4	Very Good	87.4	Very Good
2		Kamuli - Bukungu	Gravel	1	+0	5+000	5.00	5	5	1	1	1	1	1	1	1	0	0	0	0	0	3	2	1	4	33.8	Poor	60.5	Fair	85.4	Very Good	84.7	Good	37.4	Poor	68.1	Fair	87.4	Very Good	81.7	Good
2		Kamuli - Bukungu	Gravel	2	5+000	10+000	5.00	5	5	1	1	1	1	1	1	1	0	0	0	0	0	3	2	1	4	33.8	Poor	60.5	Fair	85.4	Very Good	84.7	Good	37.4	Poor	68.1	Fair	87.4	Very Good	81.9	Good
2		Kamuli - Bukungu	Gravel	3	10+000	15+000	5.00	5	5	1	1	1	1	1	1	1	1	1	1	1	3	2	1	4	33.5	Poor	60.5	Fair	84.5	Good	84.7	Good	37.4	Poor	68.1	Fair	87.4	Very Good	81.7	Good	
2		Kamuli - Bukungu	Gravel	4	15+000	20+000	5.00	5	5	1	1	1	1	1	1	1	0	0	1	2	3	2	1	4	33.4	Poor	60.5	Fair	83.9	Good	84.7	Good	37.4	Poor	68.1	Fair	87.4	Very Good	80.8	Good	
2		Kamuli - Bukungu	Gravel	5	20+000	25+000	5.00	5	5	1	1	1	2	1	1	1	0	0	1	1	3	2	1	4	33.4	Poor	60.5	Fair	84.4	Good	84.7	Good	37.4	Poor	68.1	Fair	87.4	Very Good	84.1	Good	
2		Kamuli - Bukungu	Gravel	6	25+000	30+000	5.00	5	5	1	1	1	1	1	1	1	1	1	1	1	3	2	1	4	33.5	Poor	60.5	Fair	84.5	Good	84.7	Good	37.4	Poor	68.1	Fair	87.4	Very Good	82.1	Good	
2		Kamuli - Bukungu	Gravel	7	30+000	35+000	5.00	2	2	1	1	2	2	2	2	2	2	3	3	3	3	3	1	4	68.4	Fair	60.5	Fair	62.7	Fair	84.7	Good	85.4	Very Good	68.1	Fair	87.4	Very Good	84.1	Good	
2		Kamuli - Bukungu	Gravel	8	35+000	40+000	5.00	2	2	1	1	3	2	2	2	2	2	3	2	2	2	2	1	4	74.4	Good	60.5	Fair	68.7	Fair	84.7	Good	85.4	Very Good	68.1	Fair	87.4	Very Good	84.1	Good	
2		Kamuli - Bukungu	Gravel	9	40+000	45+000	5.00	1	2	1	1	1	2	1	2	2	2	0	0	0	2	2	1	4	83.8	Good	60.5	Fair	91.8	Very Good	84.7	Good	93.4	Very Good	68.1	Fair	87.4	Very Good	79.1	Good	
2		Kamuli - Bukungu	Gravel	10	45+000	50+000	5.00	2	2	1	1	1	2	1	2	2	0	0	0	0	2	1	1	4	83.4	Good	60.5	Fair	93.0	Very Good	84.7	Good	85.4	Very Good	68.1	Fair	87.4	Very Good	87.4	Very Good	
2		Kamuli - Bukungu	Gravel	11	50+000	55+000	5.00	1	2	1	1	2	2	1	1	0	0	0	0	2	2	2	1	4	82.3	Good	60.5	Fair	84.6	Good	84.7	Good	93.4	Very Good	68.1	Fair	87.4	Very Good	87.4	Very Good	
2		Kamuli - Bukungu	Gravel	12	55+000	60+000	5.00	1	2	1	1	1	1	1	1	1	0	0	0	0	2	2	1	4	84.2	Good	60.5	Fair	92.4	Very Good	84.7	Good	93.4	Very Good	68.1	Fair	87.4	Very Good	87.4	Very Good	
2		Kamuli - Bukungu	Gravel	13	60+000	65+000	5.00	1	1	1	1	1	1	1	1	1	0	0	0	0	2	2	1	4	84.8	Good	60.5	Fair	92.4	Very Good	84.7	Good	96.4	Very Good	68.1	Fair	87.4	Very Good	87.4	Very Good	
2		Kamuli - Bukungu	Gravel	14	65+000	67+000	2.00	1	1	1	1	1	1	1	1	1	0	0	0	0	2	2	1	4	84.8	Good	60.5	Fair	92.4	Very Good	84.7	Good	96.4	Very Good	68.1	Fair	87.4	Very Good	87.4	Very Good	
3		Kamuli - Namasagali	Gravel	1	+0	5+000	5.00	5	5	2	2	4	4	4	4	4	3	3	1	5	5	2	2	2	17.8	Very Poor	42.0	Poor	27.5	Very Poor	46.0	Poor	35.2	Poor	62.5	Fair	74.2	Good	80.8	Good	
3		Kamuli - Namasagali	Gravel	2	5+000	10+000	5.00	4	4	2	2	3	2	2	2	2	3	2	1	1	3	3	2	2	2	52.2	Fair	42.0	Poor	69.0	Fair	46.0	Poor	58.2	Fair	62.5	Fair	74.2	Good	80.8	Good
3		Kamuli - Namasagali	Gravel	3	10+000	15+000	5.00	3	3	2	2	4	4	4	4	3	3	3	2	2	3	2	2	2	2	50.7	Fair	42.0	Poor	46.3	Poor	46.0	Poor	74.2	Good	62.5	Fair	74.2	Good	82.5	Good
3		Kamuli - Namasagali	Gravel	4	15+000	20+000	5.00	3	3	3	3	4	4	4	4	4	3	3	3	3	4	4	3	3	4	44.7	Poor	42.0	Poor	43.7	Poor	46.0	Poor	72.4	Good	62.5	Fair	74.2	Fair	79.7	Good
3		Kamuli - Namasagali	Gravel	5	20+000	22+000	2.00	3	3	3	3	4	4	4	4	4	3	3	3	3	4	4	3	3	4	44.7	Poor	42.0	Poor	43.7	Poor	46.0	Poor	72.4	Good	62.5	Fair	74.2	Fair	77.1	Good
4		Nabirunda - Kidera	Gravel	1	+0	5+000	5.00	4	4	2	2	2	3	2	3	2	2	1	1	3	3	2	4	52.2	Fair	49.8	Poor	75.8	Good	57.5	Fair	58.2	Fair	60.9	Fair	74.2	Good	80.8	Good		
4		Nabirunda - Kidera	Gravel	2	5+000	10+000	5.00	4	3	3	3	3	3	3	3	3	2	2	1	2	4	3	3	4	54.8	Fair	49.8	Poor	63.7	Fair	57.5	Fair	62.4	Fair	60.9	Fair	74.2	Fair	80.8	Good	
4		Nabirunda - Kidera	Gravel	3	10+000	15+000	5.00	4	4	2	2	4	4	4	4	4	4	4	1	1	5	4	2	4	31.5	Poor	49.8	Poor	35.8	Poor	57.5	Fair	58.2	Fair							

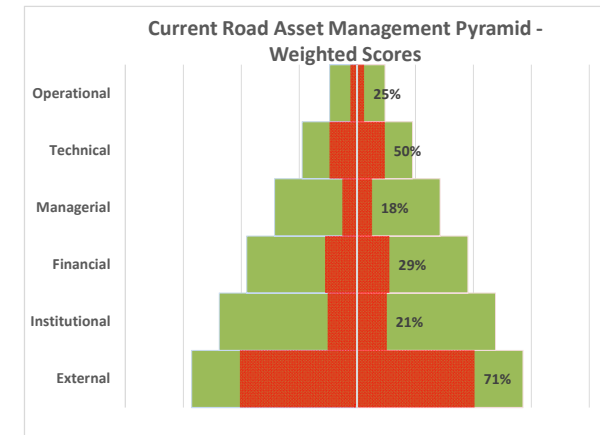
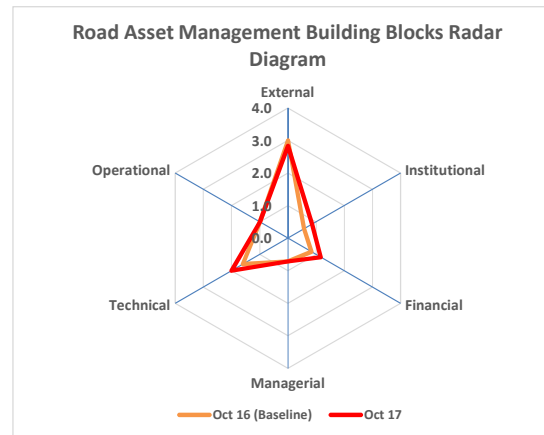
**AFCAP GEM - RURAL ROAD SECTOR SUSTAINABILITY ASSESSMENT (NOV 2017): UGANDA - Kamuli District**

Building Block	#	Item Assessed	Oct 16 (Baseline)	Oct 17
External	1.1	National policy for rural roads		3
	1.2	Existence of rural road maintenance strategy		2
	1.3	Stakeholder consultation	3	3
	1.4	Tabling of budgets		4
	1.5	Reporting back to stakeholders		2
	1.6	Involvement in programmes at local level	3	3
Institutional	2.1	AM policy development	2	2
	2.2	Level of service - existence	0	1
	2.3	Level of service - use	0	1
	2.4	Emergency response plan	1	1
	2.5	Staff roles and responsibilities	0	0
	2.6	Staff training and capacity building	0	0
	2.7	Staff salaries	1	1
Financial	3.1	Provision of road maintenance funding	2	2
	3.2	Budget funding against perceived need	1	1
	3.3	Asset valuation	0	1
	3.4	Budget funding - asset value	0	0
	3.5	Financial forecasting	0	0
	3.6	Accounting system	2	3
Managerial	4.1	AM system	0	0
	4.2	Maintenance intervention levels	0	0
	4.3	Maintenance plans - existence	3	3
	4.4	Maintenance plans - methods used	1	1
	4.5	Maintenance backlog	0	0
	4.6	Traffic forecasting	0	0
	4.7	Capital expenditure - basis for	1	1
Technical	5.1	Road referencing system - existence	0	2
	5.2	Road inventory - existence	2	2
	5.3	Road inventory data	3	3
	5.4	Road condition assessment	2	2
	5.5	Asset utilisation	1	1
Operational	6.1	Service delivery mechanisms	3	3
	6.2	Maintenance planning	0	0
	6.3	Reporting		1
	6.4	Auditing	0	0

Assessment Scoring Criteria:	
< 0	Very Poor
0-1	Poor
1-2	Fair
2-3	Good
3-4	Very Good

Weighting Ranking	Building Block	Max. Possible Score	Oct 16 (Baseline)	Oct 17	Weighting
1	External	4	3.0	2.8	0.29
2	Institutional	4	0.6	0.9	0.24
3	Financial	4	0.8	1.2	0.19
4	Managerial	4	0.7	0.7	0.14
5	Technical	4	1.6	2.0	0.10
6	Operational	4	1.0	1.0	0.05
<b>Road Sector Sustainability Assessment Score</b>			<b>1.5</b>	<b>1.6</b>	
<b>Road Sector Sustainability Rating</b>			<b>Fair</b>	<b>Fair</b>	
<b>Road Sector Sustainability Index (RSSI)</b>			<b>0.36</b>	<b>0.39</b>	

(Scale: 0 - 1)



**AFCAP GEM - RURAL ROAD SECTOR SUSTAINABILITY ASSESSMENT (NOV 2017):****UGANDA - Kamuli District****BUILDING BLOCK 1: EXTERNAL**

Key objective:	Facilitate delivery of a broad range of benefits to rural communities through effective interaction with external stakeholders.
Element:	AM policy and strategy
Issue:	The existence of an AM policy that is: <ul style="list-style-type: none"> <li>• Relevant to the rural transport sector;</li> <li>• Supported by senior decision makers;</li> <li>• Adopted at the highest level in government.</li> </ul>
Element:	Stakeholder engagement
Issue:	Engagement with stakeholders by means of informed consultations and a culture of open communications and knowledge sharing in order to: <ul style="list-style-type: none"> <li>• Understand their needs and expectations by helping to identify local requirements, alternatives and solutions to problems;</li> <li>• Lobby political support for adequate AM plans and related maintenance funding;</li> <li>• Influence the development of the district's AM strategies;</li> <li>• Communicate the district's programmes and targets;</li> <li>• Assess how the district's performance is rated by stakeholders.</li> </ul>

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
1.1 (a)	Is there a national policy for rural roads which has been adopted by the central government?	YES			0	1	3
1.1 (b)	Does the national policy define the roles and responsibilities of the agencies responsible for managing rural roads?	YES				1	
1.1 (c)	Does the national policy identify funding sources that are adequate for maintenance of the rural road network?	NO					
1.1 (d)	Does the national policy define stakeholder groups to be consulted in the management of rural roads?	YES				1	
1.2 (a)	Is there a national policy for maintenance of rural roads?	YES			0	1	2
1.2 (b)	Does the rural roads maintenance policy require the development of a strategy for undertaking sustainable rural road maintenance?	YES				1	
1.2 (c)	Does the rural roads maintenance strategy ensure that rural road improvement is linked to a simultaneous commitment to the annual maintenance costs?	NO					
1.2 (d)	Does the rural roads maintenance strategy require the rural road agencies to minimise the total costs of ownership by adopting whole-life approaches (leading to optimum balance between capital and recurrent budgets)?	NO					
1.3 (a)	Does the district generally communicate with road users, local inhabitants and local businesses/stakeholders?	YES		1	3	1	3
1.3 (b)	Does the district conduct consultations with members of the public (road users, local inhabitants and local businesses) at least annually?	YES		1		1	
1.3 (c)	Does the district use a range of techniques to communicate with stakeholders e.g. surveys, public notices, community radio, media releases, newsletters, telephone hotlines and social media?	YES		1		1	

**Economic Growth through Effective Road Asset Management**

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
1.3 (d)	Does the district have developed strategies and guidelines for community consultation and information dissemination?	NO					
1.4 (a)	Does the district actively seek participation of stakeholders and road users in the preparation of strategic plans, programmes and budgets for road works?	YES			0	1	4
1.4 (b)	Does the district discuss its strategic plans at council meetings to map out plans for short, medium and long-term road works programmes?	YES				1	
1.4 (c)	Does the district coordinate inter-sectoral district road development programmes through established council structures?	YES				1	
1.4 (d)	Does the district table road works budgets at council meetings for approval before implementing works?	YES				1	
1.5 (a)	Does the district table periodic road works roadworks acquittal reports at council meetings for approval?	YES			0	1	2
1.5 (b)	Does the district maintain a public display of road works acquittal reports for accessing by the public?	YES				1	
1.6 (a)	Does the district participate in programmes at provincial/regional and national level and through established council structures?	YES		1	3	1	3
1.6 (b)	Does the district actively communicate with the local government ministry, the national roads authority and the Road Fund through established structures on road preservation matters?	YES		1		1	
		YES		1		1	

**BUILDING BLOCK 2: INSTITUTIONAL**

**Key objective:** Successful implementation of road asset preservation practice through support of the district executives, an adequate organisational structure, adequate number of trained staff.

**Element:** AM policy and strategy

**Issue:**

- The existence of an AM policy and strategy that is supported by senior leadership;
- Need to recruit and retain capable staff by offering competitive salaries;
- An appropriate organisational structure with an adequate complement of appropriately trained staff with the necessary core competencies;
- The extent to which staff involved in the process understand and support it and are willing to contribute and improve it;
- KPIs that can be used to measure the quality of the service the agency provides;
- Means (funding) for outsourcing of all strategic, non-core activities (e.g. instrumented surveys such as roughness and deflection measurements).

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
2.1 (a)	Does the district have a corporate vision and mission statement?	YES		1	2	1	2
2.1 (b)	Does the district's mission statement consider stakeholder needs and expectations?	YES		1		1	

**Economic Growth through Effective Road Asset Management**

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
2.2(a)	Have the basic levels of service for roads been defined?	YES	Although not clearly defined or documented		0	1	1
2.2 (b)	Are stakeholders consulted when determining the levels of service?	NO					
2.3 (a)	Is the contribution of the road network (asset value) to the district understood?	YES			0	1	1
2.3 (b)	Is the cost to fulfil the level of service requirements known?	NO					
2.4 (a)	Are emergency responses understood by key members of staff?	YES		1	1	1	1
2.4 (b)	Does the district have a formal emergency response plan?	NO					
2.4 (c)	Is the safety of infrastructure routinely assessed?	NO					
2.4 (d)	Are formal debriefs given to staff after severe damage to infrastructure as a result of a traffic accident (e.g. bridge strike) or climate induced event (e.g. washout)?	NO					
2.5 (a)	Does the district's organisational structure identify roles, responsibilities and competencies of key staff, aligned with its AM policy, strategies, objectives and plans?	NO	No AM Policy in place yet		0		0
2.5 (b)	Are the roles, responsibilities and organisational commitment for AM documented and communicated to all relevant people (job descriptions)?	NO					
2.5 (c)	Does the district have an adequate complement of appropriately qualified staff with designated responsibilities to undertake its AM mandate?	NO					
2.5 (d)	Is the district able to outsource its non-core activities (e.g. instrumented surveys such as roughness and deflections)?	NO					
2.6 (a)	Does the district receive/offer training opportunities for staff?	NO			0		0
2.6 (b)	Does AM specific training occur for primary staff?	NO					
2.6 (c)	Does the district implement an on-going training programme to address required AM competencies?	NO					
2.6 (d)	Is there a formal AM capacity building programme which is routinely monitored?	NO					
2.7 (a)	Are district engineer salaries less than 50% of comparable private sector positions?	YES		1	1	1	1
2.7 (b)	Are district engineer salaries 50-80% of comparable private sector positions?	NO					
2.7 (c)	Are district engineer salaries roughly the same as comparable private sector positions?	NO					
2.7 (d)	Are district engineer salaries greater than comparable private sector positions?	NO					

**BUILDING BLOCK 3: FINANCIAL**

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
<p>Key objective: The achieve stable, adequate and sustainable funding for maintenance.                      Element: Financial arrangements                      Issue:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> A stable, adequate and sustainable source(s) of funding for maintenance;</li> <li><input type="checkbox"/> Annual asset valuation of road infrastructure assets;</li> <li><input type="checkbox"/> Costing framework for determining unit costs of works;</li> <li><input type="checkbox"/> Budgeting and programming processes;</li> <li><input type="checkbox"/> Prioritised maintenance investment plan;</li> <li><input type="checkbox"/> Risk strategy to address potential consequences of inadequate funding (e.g. emergency response);</li> <li><input type="checkbox"/> Financial accounting and auditing of expenditure.</li> </ul>							
ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
3.1 (a)	Does the district depend only on the consolidated fund (own funds) for road maintenance?	NO		1	2	1	2
3.1 (b)	Is the funding received from the consolidated ROAD fund related to road asset condition and performance?	NO		1			
3.1 (c)	Does the district get a fixed share of its maintenance funding requirement from a Road Fund and/or central government?	YES				1	
3.1 (d)	Does the district get a variable share of its maintenance funding requirement from the Road Fund that is related to road asset condition and performance?	NO					
3.2 (a)	Is the percentage of the budgeted funding obtained < 30 % of that required?	YES		1	1	1	1
3.2 (b)	Is the percentage of the budgeted funding obtained 30%-59% of that required?	NO					
3.2 (c)	Is the percentage of the budgeted funding obtained 60% - 89% of that required?	NO					
3.2 (d)	Is the percentage of the budgeted funding obtained 90% - 100%of that required?	NO					
3.3 (a)	Does the district carry out asset valuation?	YES			0	1	1
3.3 (b)	Where the district carries out asset valuation, is the value of the district's road asset decreasing?	YES				0	
3.3 (c)	Where the district carries out asset valuation, is the value of the district's road asset stable?	NO					
3.3 (d)	Where the district carries out asset valuation, is the value of the district's road asset increasing?	NO					
3.4(A)	Is the percentage of the maintenance funding obtained ≥ 0.1% of the asset value of the road network?	NO			0		0
3.4 (b)	Is the percentage of the maintenance funding obtained ≥ 0.5% of the asset value of the road network?	NO					
3.4 (c)	Is the percentage of the maintenance funding obtained ≥ 1 % of the asset value of the road network?	NO					
3.4 (d)	Is the percentage of the maintenance funding obtained ≥ 1.5 % of the asset value of the road network?	NO					

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
3.5 (a)	Does the district carry out annual and multi-annual financial forecasting for maintenance works?	NO			0		0
3.5 (b)	Are the financial forecasts for maintenance works based on current Asset Management Plan (AMP) outputs?	NO					
3.6 (a)	Does the district operate an accounting system?	YES		1	2	1	3
3.6 (b)	Are the accounts audited annually?	YES		1		1	
3.6 (c)	Are the accounts published annually?	YES				1	
3.6(d)							

**BUILDING BLOCK 4: MANAGERIAL**

Key objective: Successful implementation of road asset preservation practice through support of the district executives, an adequate organisational structure, adequate number of trained staff

Element: Network management

Issue:

- Use of appropriate AM system that contains:
  - Network definition (road and bridge inventory information),
  - Network condition (roads and bridges)
  - Network usage (traffic)
  - Financial/cost information on works activities
  - Storage, update, analysis and reporting of data collected
- Appropriate levels of service and intervention standards that determine gaps in network performance?
- Prioritised annual, medium (3- 5yrs) and long term ( > 5 yrs) maintenance and development plans and related investment plans?
- A risk management strategy (for unfunded works);
- Annual reporting on the overall management of the road asset (AM plan);
- Demand forecasting.

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
4.1 (a)	Does the district have an AM system(s) in place which can store current and historical asset inventory, condition and asset utilization data (e.g. traffic)?	NO			0		0
4.1 (b)	Does the AM system enable road treatment cost and historical maintenance information to be stored and accessed?	NO					
4.1 ©	Does the AM system allow for the comparison of the current condition of road assets with intervention levels to determine maintenance requirements?	NO					
4.1 (d)	Can the AM system facilitate the prioritisation of road sections requiring maintenance?	NO					
4.2 (a)	Has the district developed intervention levels for all its principal asset types which require periodic maintenance (carriageway, bridges, and culverts)?	NO			0		0
4.2 (b)	Are the intervention levels directly associated with defined levels of service?	NO					
4.2 (c)	Have the intervention levels been determined using an economic analysis?	NO					
4.2 (d)	Have the intervention levels been determined using socio-economic-political (i.e. multi-criteria) analysis?	NO					

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
4.3 (a)	Does the district produce annual maintenance and development plans?	YES		1	3	1	3
4.3 (b)	Does the district produce annual prioritised maintenance and development plans?	YES		1		1	
4.3 (c)	Does the district provide prioritised medium term (3-5 year) maintenance plans?	YES		1		1	
4.3 (d)							
4.4 (a)	Does the district keep records of maintenance and development work activities?	YES		1	1	1	1
4.4 (b)	Is maintenance and development prioritised according to asset condition?	NO					
4.4 (c)	Is maintenance and development prioritised using a cost benefit approach?	NO					
4.4 (d)	Is maintenance and development expenditure prioritised using techniques which consider economic and social benefit?	NO					
4.5 (a)	Does the district keep a record of maintenance works backlog?	NO			0		0
4.5 (b)	Does the district have a strategy to reduce maintenance backlog based on a percentage of the available development budget?	NO					
4.5 (c)	Does the district prioritise the reduction of maintenance backlog using an economic analysis?	NO					
4.5 (d)	Does the district prioritise the reduction of maintenance backlog using risk management techniques?	NO					
4.6 (a)	Does the district carry out basic demand (traffic) forecasting?	NO			0		0
4.6 (b)	Are the forecasts of traffic demand based on traffic counts carried out in the last 5 years using robust economic indicators (e.g. GDP)?	NO					
4.7 (a)	Does the district schedule capital projects using staff judgement, taking into consideration government policy and political drivers?	YES		1	1	1	1
4.7 (b)	Are projects identified using input from operational staff, estimates of service lives, traffic demand	NO					
4.7 (c)	Are major capital projects for the next 10 years identified and prioritised taking into account socio-political-economic requirements?	NO					
4.7 (d)	Does the district use advanced formalised socio-economic-political decision-making techniques to identify major capital expenditure?	NO					

**BUILDING BLOCK 5: TECHNICAL**

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
<p>Key objective: Identification and description of road assets including inventory, condition data and performance monitoring; and availability of data to network managers.</p> <p>Element: Road network database</p> <p>Issue:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Existence of a road referencing system;</li> <li><input type="checkbox"/> Existence of a classified road inventory;</li> <li><input type="checkbox"/> Standard procedures for developing a road inventory, data collection and performance monitoring;</li> <li><input type="checkbox"/> Use of asset register to store all road asset information.</li> </ul>							
ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
5.1 (a)	Does the district have a road referencing system based on routes and nodes between centres of population?	YES			0	1	2
5.1 (b)	Is the road referencing system based on road sections (< 5 km) with homogeneous characteristics?	YES				1	
5.1 (c)	Is the road referencing system based on sub-sections (homogenous sections of 200 m lengths)?	NO					
5.1 (d)	Is the road referencing system GIS based?	NO					
5.2 (a)	Does the district have an item inventory recording basic road surface types (earth, gravel or sealed)?	YES		1	2	1	2
5.2 (b)	Does the district undertake an inventory of all principal assets (carriageway, shoulders, bridges, culverts, side drains)?	YES		1		1	
5.2 (c)	Does the inventory include the service levels of all principal assets?	NO					
5.2 (d)	Does the district have deterioration models for all principal assets?	NO					
5.3 (a)	Is the road inventory based on assumptions or incomplete data?	NO		1	3		3
5.3 (b)	Is there a system of systematic and documented data collection for all principal assets (carriageway, shoulders, bridges, culverts, side drains) on a road by road basis?	YES		1		1	
5.3 (c)	Is there an established system of systematic and documented data collection for all principal assets (carriageway, shoulders, bridges, culverts, side drains) on a section basis?	YES		1		1	
5.3 (d)	Is there an established system of systematic and documented data collection for all principal assets on a sub-section basis?	YES				1	
5.4 (a)	Does the district carry out annual visual condition assessment surveys for carriageways, shoulders of gravel and earth roads?	YES		1	2	1	2
5.4 (b)	Are the visual condition assessments of gravel and earth roads carried out in accordance with well documented, standardised procedures?	YES		1		1	
5.4 (c)	Does the district measure gravel loss annually?	NO					
5.4 (d)	Are the results of the road condition assessment and other road recorded in a computerised AM system?	NO					

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
5.5 (a)	Does the district estimate asset utilization (traffic) on its network?	NO		1	1		1
5.5 (b)	Does the district measure asset utilization (traffic) annually on its major roads?	NO					
5.5 (c)	Does the district forecast asset utilization across its network from annual measures of utilization of a sampled number of roads?	NO					
5.5 (d)	Does the district assess bottlenecks on its network?	YES				1	

**BUILDING BLOCK 6: OPERATIONAL**

Key objective: Efficient operations at district level including planning and scheduling of maintenance, procurement of service providers and technical compliance.

Element: Procurement of services

Issue:

- Appropriate type of contract;
- Outsourcing of strategic, non-core activities;
- Maintenance scheduling of works;
- Auditing of maintenance works.

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
6.1 (a)	Are service delivery roles within the district council clearly allocated?	YES		1	3	1	3
6.1 (b)	Does the council have provision for outsourcing of non-core activities?	YES		1		1	
6.1 (c)	Are competitive tendering practices used?	YES		1		1	
6.1 (d)	Are service delivery mechanisms reviewed annually to identify risks, benefits and costs of various outsourcing options?	NO					
6.2 (a)	Does the district plan day to day maintenance activities?	NO			0		0
6.2 (b)	Are the needs of stakeholders considered when scheduling day to day maintenance?	NO					
6.2 (c)	Is the planning of day to day maintenance optimised in terms of the availability and use of resources?	NO					
6.2 (d)	Is day to day planning of maintenance optimised by considering the availability of resources and impacts on road users?	NO					
6.3 (a)	Does the district prepare day to day reports on road maintenance activities?	NO			0		1
6.3 (b)	Does the district prepare weekly reports on road maintenance activities?	YES				1	
6.4 (a)	Does the district undertake technical audits of designs?	NO			0		0
6.4 (b)	Does the district regularly undertake technical audits of maintenance, construction and rehabilitation works?	NO					
6.4 (c)	Does the district provide guidelines for undertaking the road audits?	NO	No clear guidelines				
6.4 (d)	Does the district require service suppliers to be ISO 9000 certified?	NO					

## AFCAP GEM - RURAL ROAD SECTOR SUSTAINABILITY ASSESSMENT (NOV 2017): UGANDA

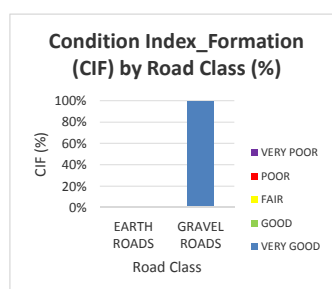
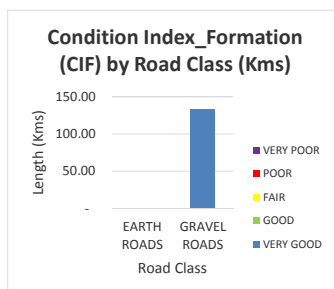
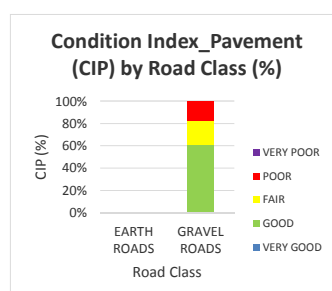
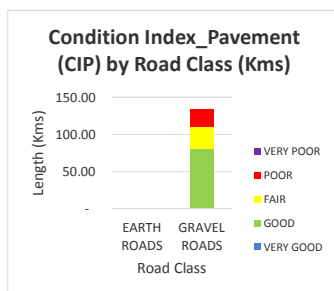
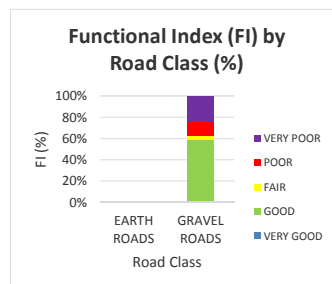
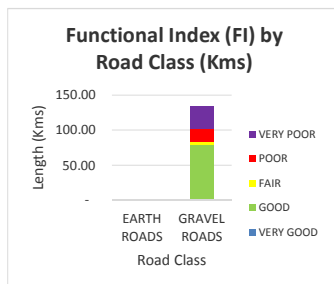
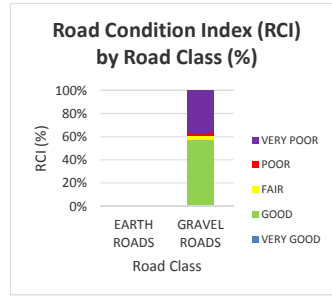
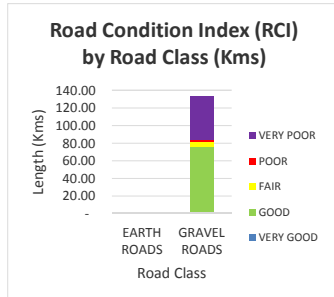
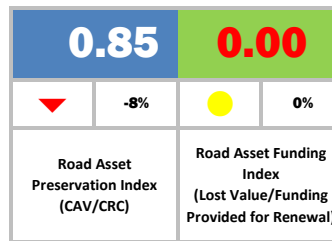
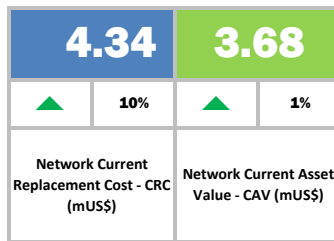
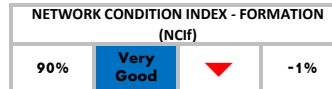
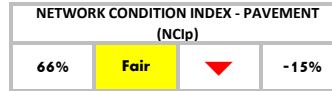
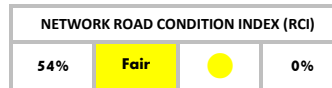
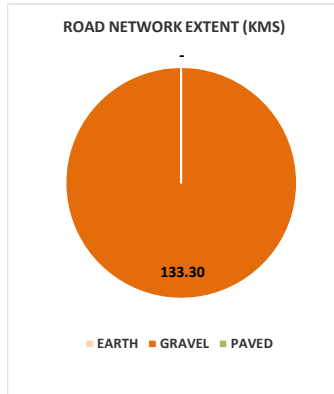
### MEASURABLE DATA

Building Block	Data Item	Unit	Benchmark	2016
External	Stakeholder communication tools available	No.		1
	Meetings with stakeholders - pre budget	No.		1
	Council meetings - strategy	No.		0
	Council meetings - budget approval	No.		1
	Meetings with stakeholders - post budget	No.		0
Institutional	Total establishment - engineers + technicians	No.		3
	Vacancies - engineers + technicians	No.		1
	Planned training programmes	No.		0
	Training courses undertaken	No.		0
	DE salary as % of private sector	%		65%
Financial	Estimated project road network asset value	mUS\$		15.5
	Total requirements - routine maintenance	mUS\$		not known
	Total requirements - periodic maintenance	mUS\$		not known
	Total requirements - rehabilitation/reconstruction	mUS\$		not known
	Total requirements - development	mUS\$		not known
	Budget - routine maintenance	mUS\$		not known
	Budget - periodic maintenance	mUS\$		not known
	Budget - rehabilitation/reconstruction	mUS\$		not known
	Budget - development	mUS\$		not known
	Funding - Road fund	mUS\$		0.100
	Funding - Council funds	mUS\$		not known
	Funding - Donors	mUS\$		not known
	Funding - Others	mUS\$		not known
Managerial	Cost of asset management system	US\$		not known
	Annual maintenance cost of AM system	US\$		not known
	Network under routine maintenance	Kms		not known
	Network under routine maintenance as % of total	%		not known
	Network under periodic maintenance	Kms		not known
	Network under periodic maintenance as % of total	%		not known
	Network under rehabilitation	Kms		not known
	Network under rehabilitation as % of total	%		not known
	Network upgrading	Kms		not known
	Network upgrading as % of total	%		not known
	Network planned for periodic next 3 yrs	Kms		not known
	Network planned for rehabilitation next 3 yrs	Kms		not known
	Network planned for upgrading next 3 yrs	Kms		not known
Technical	Total network length in district	Kms		600
	Project network length	Kms		250
	Network length - engineered/gravelled	Kms		50
	Network length - non-engineered	Kms		50
	No of culverts - pipes			not known
	No of culverts - box			not known
	No of low level drifts			not known
	No of bridges			not known
	No of structures inspected			not known
	No of visual inspection cycles - road			not known

**Economic Growth through Effective Road Asset Management**

<b>Building Block</b>	<b>Data Item</b>	<b>Unit</b>	<b>Benchmark</b>	<b>2016</b>
	No of vehicle counts			not known
	% Network - Very Good			not known
	% Network - Good			not known
	% Network - Fair			not known
	% Network - Poor			not known
	% Network - Very Poor			not known
	% Culverts - Very Good			not known
	% Culverts - Good			not known
	% Culverts - Fair			not known
	% Culverts - Poor			not known
	% Culverts - Very Poor			not known
	% Bridges - Very Good			not known

**AFCAP GEM PROJECT: UGANDA - Kamuli District (2017)**  
**ROAD CONDITION AND ASSET VALUE DASHBOARD**



**AFCAP GEM PROJECT: UGANDA - Kamuli District (2017)**  
**ROAD CONDITION AND ASSET VALUE TABLES**

ROAD NETWORK EXTENT												
TYPE	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
EARTH	26.30	-	-	-	-	-	20%	0%	0%	0%	0%	0%
GRAVEL	107.00	133.30	133.30	133.30	133.30	133.30	80%	100%	100%	100%	100%	100%
PAVED	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
<b>TOTAL</b>	<b>133.30</b>	<b>133.30</b>	<b>133.30</b>	<b>133.30</b>	<b>133.30</b>	<b>133.30</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

ROAD CONDITION INDEX (RCI) BY YEAR												
	EARTH ROADS						GRAVEL ROADS					
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
GOOD	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
FAIR	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
POOR	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
VERY POOR	-	-	-	-	-	-	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
<b>TOTAL</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0%</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>

FUNCTIONAL INDEX (FI) BY YEAR												
	EARTH ROADS						GRAVEL ROADS					
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	-	-	-	-	-	-	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
GOOD	15.80	-	-	-	-	-	100%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
FAIR	-	-	-	-	-	-	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
POOR	-	-	-	-	-	-	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
VERY POOR	-	-	-	-	-	-	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
<b>TOTAL</b>	<b>15.80</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>100%</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>

PAVEMENT CONDITION INDEX (PCI) BY YEAR												
	EARTH ROADS						GRAVEL ROADS					
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	-	-	-	-	-	-	-	-	-	-	-	-
GOOD	-	-	-	-	-	-	-	-	-	-	-	-
FAIR	-	-	-	-	-	-	-	-	-	-	-	-
POOR	-	-	-	-	-	-	-	-	-	-	-	-
VERY POOR	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTAL</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>

FORMATION CONDITION INDEX (FCI) BY YEAR												
	EARTH ROADS						GRAVEL ROADS					
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	12.60	-	-	-	-	-	80%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
GOOD	3.20	-	-	-	-	-	20%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
FAIR	-	-	-	-	-	-	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
POOR	-	-	-	-	-	-	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
VERY POOR	-	-	-	-	-	-	0%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
<b>TOTAL</b>	<b>15.80</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>100%</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>	<b>#DIV/0!</b>

ROAD CONDITION AND ASSET VALUE TABLES												
	EARTH ROADS						GRAVEL ROADS					
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	89.90	133.30	133.30	133.30	133.30	133.30	77%	100%	100%	100%	100%	100%
GOOD	27.60	-	-	-	-	-	23%	0%	0%	0%	0%	0%
FAIR	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
POOR	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
VERY POOR	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
<b>TOTAL</b>	<b>117.50</b>	<b>133.30</b>	<b>133.30</b>	<b>133.30</b>	<b>133.30</b>	<b>133.30</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**AFCAP GEM PROJECT: UGANDA - Kamuli District (2017)**  
**ROAD CONDITION AND ASSET VALUE TABLES**

<b>NETWORK CONDITION INDICES BY YEAR</b>												
	<b>PERCENT</b>											
	2016 - BASELINE	2017	2018	2019	2020	2021						
NETWORK RCI	54%	54%	54%	54%	54%	54%						
% MOVE		0%										
NETWORK FI	81%	60%	60%	60%	60%	60%						
% MOVE		-21%										
NETWORK CIP	81%	66%	66%	66%	66%	66%						
% MOVE		-15%										
NETWORK CIF	91%	90%	90%	90%	90%	90%						
% MOVE		-1%										
<b>ASSET PRESERVATION NEEDS BY YEAR</b>												
	<b>MIL US\$</b>						<b>PERCENT</b>					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
ROUTINE	0.27	0.27	0.27	0.27	0.27	0.27	75%	41%	41%	41%	41%	41%
% MOVE		0%										
PERIODIC	-	0.38	0.38	0.38	0.38	0.38	0%	59%	59%	59%	59%	59%
% MOVE		59%										
UPGRADING	0.09	-	-	-	-	-	25%	0%	0%	0%	0%	0%
REHABILITATION	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
<b>TOTAL</b>	<b>0.35</b>	<b>0.65</b>	<b>0.65</b>	<b>0.65</b>	<b>0.65</b>	<b>0.65</b>						
<b>BUDGET BY YEAR</b>												
	<b>MIL US\$</b>						<b>PERCENT</b>					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
ROUTINE	0.01	0.01	0.01	-	-	-	100%	100%	100%	0%	0%	0%
% MOVE		0%										
PERIODIC	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
% MOVE		0%										
UPGRADING	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
REHABILITATION	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
<b>TOTAL</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>-</b>	<b>-</b>	<b>-</b>						
<b>ACTUAL EXPENDITURE BY YEAR</b>												
	<b>MIL US\$</b>						<b>PERCENT</b>					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
ROUTINE	0.01	0.01	0.01	-	-	-	100%	100%	100%	#DIV/0!	#DIV/0!	#DIV/0!
PERIODIC	-	-	-	-	-	-	0%	0%	0%	#DIV/0!	#DIV/0!	#DIV/0!
UPGRADING	-	-	-	-	-	-	0%	0%	0%	#DIV/0!	#DIV/0!	#DIV/0!
REHABILITATION	-	-	-	-	-	-	0%	0%	0%	#DIV/0!	#DIV/0!	#DIV/0!
<b>TOTAL</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>-</b>	<b>-</b>	<b>-</b>						
<b>ASSET VALUATION BY YEAR</b>												
	<b>MIL US\$/KMS</b>											
	2016 - BASELINE	2017	2018	2019	2020	2021						
CURRENT REPLACEMENT COST	3.95	4.34	4.34	4.34	4.34	4.34						
% MOVE		10%										
THRESHOLD VALUE REQUIRED	2.76	3.04	3.04	3.04	3.04	3.04						
DEPRECIATED REMAINING VALUE	3.65	3.68	3.68	3.68	3.68	3.68						
% MOVE		1%										
DEPRECIATED/LOST VALUE	0.30	0.66	0.66	0.66	0.66	0.66						
LENGTH < THRESHOLD VALUE (KMS)	-	-	-	-	-	-						
<b>ASSET SUSTAINABILITY RATIOS AND INDICES</b>												
	2016 - BASELINE	2017	2018	2019	2020	2021						
Road Asset Preservation Index	0.92	0.85	0.85	0.85	0.85	0.85						
% MOVE		-8%	0%									
Road Asset Preservation Funding	-	-	-	-	-	-						
% MOVE		0%	0%									

**AFCAP GEM PROJECT: UGANDA - Kamuli District (2017)**  
**ASSET VALUE CALCULATION**

BASIC INFORMATION ON ROAD AND SECTIONS										CURRENT REPLACEMENT COST							EXPECTED THRESHOLD VALUE						CURRENT ASSET VALUE						ANALYSIS			
GEM Road No.	Road No.	Road Name	Road Type	Segment No.	Start Km	End Km	Length (km)	Expected Useful Life - EUL (Yrs)		Gravel Road CRC Cost/Km (\$)	CRC Cost/km: Formation (\$)	CRC Cost/km: Pavement (\$)	Formation CRC Cost (\$)	Pavement CRC Cost (\$)	Current Replacement Cost (\$)	Min. Threshold Condition - Rating		Remaining Useful Life (RUL) at Threshold Condition (Yrs)		Depreciated Remaining Cost (DRC) at Threshold Condition (\$)		Asset Value at Threshold Condition (\$)	Current Condition Rating		Remaining Useful Life (RUL) at Current Condition (Yrs)		Depreciated Remaining Cost (DRC) at Current Condition (\$)		Current Asset Value (\$)	Current Asset Value as % of CRC	Current Asset Value as % of Min Threshold Value	Roads with Condition Less than Permissible (Kms)
								Formation	Pavement							Formation	Pavement	Formation	Pavement	Formation	Pavement		Formation	Pavement	Formation	Pavement	Formation	Pavement				
1	0	Bulunda - Kakindu	Gravel	1	+0	5+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Fair	47.5	4.9	64 125.00	57 750.00	121 875.00	81%	116%	-
1	0	Bulunda - Kakindu	Gravel	2	5+000	10+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Fair	47.5	4.9	64 125.00	57 750.00	121 875.00	81%	116%	-
1	0	Bulunda - Kakindu	Gravel	3	10+000	13+200	3.20	50	7	30 000.00	13 500.00	16 500.00	43 200.00	52 800.00	96 000.00	Fair	Fair	35.0	4.9	30 240.00	36 960.00	67 200.00	Very Good	Poor	47.5	3.5	41 040.00	26 400.00	67 440.00	70%	100%	-
2	0	Balowoli - Namasagali	Gravel	1	+0	5+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Poor	47.5	3.5	64 125.00	41 250.00	105 375.00	70%	100%	-
2	0	Balowoli - Namasagali	Gravel	2	5+000	10+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Poor	47.5	3.5	64 125.00	41 250.00	105 375.00	70%	100%	-
2	0	Balowoli - Namasagali	Gravel	3	10+000	15+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Poor	47.5	3.5	64 125.00	41 250.00	105 375.00	70%	100%	-
2	0	Balowoli - Namasagali	Gravel	4	15+000	17+600	2.60	50	7	30 000.00	13 500.00	16 500.00	35 100.00	42 900.00	78 000.00	Fair	Fair	35.0	4.9	24 570.00	30 030.00	54 600.00	Very Good	Poor	47.5	3.5	33 345.00	21 450.00	54 795.00	70%	100%	-
3	0	Balowoli - Kyamatende	Gravel	1	+0	5+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Good	47.5	6.0	64 125.00	70 125.00	134 250.00	90%	128%	-
3	0	Balowoli - Kyamatende	Gravel	2	5+000	10+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Good	47.5	6.0	64 125.00	70 125.00	134 250.00	90%	128%	-
3	0	Balowoli - Kyamatende	Gravel	3	10+000	15+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Good	47.5	6.0	64 125.00	70 125.00	134 250.00	90%	128%	-
3	0	Balowoli - Kyamatende	Gravel	4	15+000	17+600	2.60	50	7	30 000.00	13 500.00	16 500.00	35 100.00	42 900.00	78 000.00	Fair	Fair	35.0	4.9	24 570.00	30 030.00	54 600.00	Very Good	Poor	47.5	3.5	33 345.00	21 450.00	54 795.00	70%	100%	-
4	0	Nawantale - Kibuye	Gravel	1	+0	5+000	5.00	50	7	45 000.00	20 250.00	24 750.00	101 250.00	123 750.00	225 000.00	Fair	Fair	35.0	4.9	70 875.00	86 625.00	157 500.00	Very Good	Good	47.5	6.0	96 187.50	105 187.50	201 375.00	90%	128%	-
4	0	Nawantale - Kibuye	Gravel	2	5+000	10+000	5.00	50	7	45 000.00	20 250.00	24 750.00	101 250.00	123 750.00	225 000.00	Fair	Fair	35.0	4.9	70 875.00	86 625.00	157 500.00	Very Good	Good	47.5	6.0	96 187.50	105 187.50	201 375.00	90%	128%	-
4	0	Nawantale - Kibuye	Gravel	3	10+000	15+000	5.00	50	7	45 000.00	20 250.00	24 750.00	101 250.00	123 750.00	225 000.00	Fair	Fair	35.0	4.9	70 875.00	86 625.00	157 500.00	Very Good	Good	47.5	6.0	96 187.50	105 187.50	201 375.00	90%	128%	-
4	0	Nawantale - Kibuye	Gravel	4	15+000	20+000	5.00	50	7	45 000.00	20 250.00	24 750.00	101 250.00	123 750.00	225 000.00	Fair	Fair	35.0	4.9	70 875.00	86 625.00	157 500.00	Very Good	Good	47.5	6.0	96 187.50	105 187.50	201 375.00	90%	128%	-
4	0	Nawantale - Kibuye	Gravel	5	20+000	22+700	2.70	50	7	45 000.00	20 250.00	24 750.00	54 675.00	66 825.00	121 500.00	Fair	Fair	35.0	4.9	38 272.50	46 777.50	85 050.00	Very Good	Good	47.5	6.0	51 941.25	56 801.25	108 742.50	90%	128%	-
5	0	Kasambara - Bugulumbya	Gravel	1	+0	5+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Good	47.5	6.0	64 125.00	70 125.00	134 250.00	90%	128%	-
5	0	Kasambara - Bugulumbya	Gravel	2	5+000	10+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Good	47.5	6.0	64 125.00	70 125.00	134 250.00	90%	128%	-
5	0	Kasambara - Bugulumbya	Gravel	3	10+000	15+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Good	47.5	6.0	64 125.00	70 125.00	134 250.00	90%	128%	-
6	0	Kasambira - Wankole	Gravel	1	+0	5+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Fair	47.5	4.9	64 125.00	57 750.00	121 875.00	81%	116%	-
6	0	Kasambira - Wankole	Gravel	2	5+000	8+700	3.70	50	7	30 000.00	13 500.00	16 500.00	49 950.00	61 050.00	111 000.00	Fair	Fair	35.0	4.9	34 965.00	42 735.00	77 700.00	Very Good	Fair	47.5	4.9	47 452.50	42 735.00	90 187.50	81%	116%	-
7	0	Naminage - Bulange	Gravel	1	+0	5+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Fair	47.5	4.9	64 125.00	57 750.00	121 875.00	81%	116%	-
7	0	Naminage - Bulange	Gravel	2	5+000	10+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Fair	47.5	4.9	64 125.00	57 750.00	121 875.00	81%	116%	-
8	0	Namaganda - Bugonda	Gravel	1	+0	5+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Good	47.5	6.0	64 125.00	70 125.00	134 250.00	90%	128%	-
8	0	Namaganda - Bugonda	Gravel	2	5+000	10+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Good	47.5	6.0	64 125.00	70 125.00	134 250.00	90%	128%	-
9	0	Namwendwa - Ndalike	Gravel	1	+0	5+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Good	47.5	6.0	64 125.00	70 125.00	134 250.00	90%	128%	-
9	0	Namwendwa - Ndalike	Gravel	2	5+000	8+500	3.50	50	7	30 000.00	13 500.00	16 500.00	47 250.00	57 750.00	105 000.00	Fair	Fair	35.0	4.9	33 075.00	40 425.00	73 500.00	Very Good	Good	47.5	6.0	44 887.50	49 087.50	93 975.00	90%	128%	-
10	0	Namwendwa - Kyeeya - Buyamba	Gravel	1	+0	5+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Good	47.5	6.0	64 125.00	70 125.00	134 250.00	90%	128%	-
10	0	Namwendwa - Kyeeya - Buyamba	Gravel	2	5+000	10+000	5.00	50	7	30 000.00	13 500.00	16 500.00	67 500.00	82 500.00	150 000.00	Fair	Fair	35.0	4.9	47 250.00	57 750.00	105 000.00	Very Good	Good	47.5	6.0	64 125.00	70 125.00	134 250.00	90%	128%	-

## AFCAP GEM PROJECT: UGANDA - Kamuli District (2017)

### ASSET VALUATION DATA

**Expected Useful Life**

Gravel Pavement	7 years
Formation	50 yrs

**Costs per Km**

Total CRC/Km Gravel Road	30 000.00
Formation	45% 13 500.00 US\$
Gravel Pavement	55% 16 500.00 US\$
Routine Maintenance	2 000.00 US\$
Periodic Maintenance - Regravel	13 200.00 US\$
Rehabilitation	19 800.00 US\$
Upgrading	16 500.00 US\$

**Min Threshold Conditions**

Gravel Layer	Fair
Formation	Fair

**Road Maintenance and Development Needs Parameters**

	2016 Baseline	2017	2018	2019	2020	2021
% of Network to Maintain	100%	100%	100%	100%	100%	100%
% of Fair for Periodic	100%	100%	100%	100%	100%	100%
% of Poor and V.Poor for Rehab	50%	50%	50%	50%	50%	50%
% of Earth Roads to Upgrade	20%	20%	20%	20%	20%	20%

**Costs per Km (Actual)**

Routine Maintenance	85.00 US\$
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**Budget History (million US\$)**

	2016 Baseline	2017	2018	2019	2020	2021
Routine Maintenance	0.01	0.01	0.01			
Periodic Maintenance	-	-	-			
Upgrading	-	-	-			
Rehabilitation	-	-	-			
<b>Total</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	-	-	-

**Actual Expenditure (million US\$)**

	2016 Baseline	2017	2018	2019	2020	2021
Routine Maintenance	0.01	0.01	0.01			
Periodic Maintenance	-	-	-			
Upgrading	-	-	-			
Rehabilitation	-	-	-			
<b>Total</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	-	-	-

AFCAP GEM PROJECT: UGANDA - Kamuli District (2017)																																							
ROAD FUNCTIONALITY AND CONDITION INDICES																																							
D - DEGREE/SEVERITY							E - DEFECT EXTENT/OCCURRENCE/QUANTITY										CONDITION RATING CRITERIA																						
1. Slight 2. Slight to Warning 3. Warning 4. Warning to Severe 5. Severe							% of length: 1. <5% 2. 5-10% 3. 10-25% 4. 25-50% 5 >50%										Very Poor: <30% Poor: 30-50% Fair: 50-70% Good: 70-85% Very Good: >85%																						
GEM Road No	Road No	Road Name	Road Type	Segment No.	Start Km	End Km	Length (km)	Gravel Loss		Usable Width		Erosion C-Way		Erosion S/Drains		Potholes		Corrugations		Rutting		Impassability		Road Condition Index - RCI (%)				Functionality Index - FI (%)				Condition Index - Pavement - CIP (%)				Condition Index - Formation - CIF (%)			
								D	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	D	E	Segment CI	Segment CI Rating	RCI	RCI Rating	Segment FI	Segment FI Rating	Road FI	Road FI Rating	Segment CIP	Segment CIP Rating	Road CIP	Road CIP Rating
1		Bulunda - Kakindu	Gravel	1	+0	5+000	5.0	4	5	1	1	2	2	2	2	5	5	4	4	4	4	5	5	21.6	Very Poor	20.5	Very Poor	16.5	Very Poor	16.5	Very Poor	54.4	Fair	48.7	Poor	90.4	Very Good	90.4	Very Good
1		Bulunda - Kakindu	Gravel	2	5+000	10+000	5.0	4	5	1	1	2	2	2	2	5	5	4	4	4	4	5	5	21.6	Very Poor	20.5	Very Poor	16.5	Very Poor	16.5	Very Poor	54.4	Fair	48.7	Poor	90.4	Very Good	90.4	Very Good
1		Bulunda - Kakindu	Gravel	3	10+000	13+200	3.2	5	5	1	1	2	2	2	2	5	5	4	4	4	4	5	5	18.2	Very Poor	20.5	Very Poor	16.5	Very Poor	16.5	Very Poor	37.4	Poor	48.7	Poor	90.4	Very Good	90.4	Very Good
2		Balowoli - Namasagali	Gravel	1	+0	5+000	5.0	5	5	1	1	2	2	2	2	4	4	3	3	3	3	3	5	25.2	Very Poor	25.2	Very Poor	40.7	Poor	40.7	Poor	37.4	Poor	37.4	Poor	90.4	Very Good	90.4	Very Good
2		Balowoli - Namasagali	Gravel	2	5+000	10+000	5.0	5	5	1	1	2	2	2	2	4	4	3	3	3	3	3	5	25.2	Very Poor	25.2	Very Poor	40.7	Poor	40.7	Poor	37.4	Poor	37.4	Poor	90.4	Very Good	90.4	Very Good
2		Balowoli - Namasagali	Gravel	3	10+000	15+000	5.0	5	5	1	1	2	2	2	2	4	4	3	3	3	3	3	5	25.2	Very Poor	25.2	Very Poor	40.7	Poor	40.7	Poor	37.4	Poor	37.4	Poor	90.4	Very Good	90.4	Very Good
2		Balowoli - Namasagali	Gravel	4	15+000	17+600	2.6	5	5	1	1	2	2	2	2	4	4	3	3	3	3	3	5	25.2	Very Poor	25.2	Very Poor	40.7	Poor	40.7	Poor	37.4	Poor	37.4	Poor	90.4	Very Good	90.4	Very Good
3		Balowoli - Kyamatende	Gravel	1	+0	5+000	5.0	3	3	1	1	1	1	1	1	2	2	1	1	1	1	1	4	73.3	Good	63.6	Fair	81.9	Good	81.9	Good	76.4	Good	66.7	Fair	90.4	Very Good	90.4	Very Good
3		Balowoli - Kyamatende	Gravel	2	5+000	10+000	5.0	3	3	1	1	1	1	1	1	2	2	1	1	1	1	1	4	73.3	Good	63.6	Fair	81.9	Good	81.9	Good	76.4	Good	66.7	Fair	90.4	Very Good	90.4	Very Good
3		Balowoli - Kyamatende	Gravel	3	10+000	15+000	5.0	3	3	1	1	1	1	1	1	2	2	1	1	1	1	1	4	73.3	Good	63.6	Fair	81.9	Good	81.9	Good	76.4	Good	66.7	Fair	90.4	Very Good	90.4	Very Good
3		Balowoli - Kyamatende	Gravel	4	15+000	17+600	2.6	5	5	1	1	1	1	1	1	2	2	1	1	1	1	1	4	34.3	Poor	63.6	Fair	81.9	Good	81.9	Good	37.4	Poor	66.7	Fair	90.4	Very Good	90.4	Very Good
4		Nawantale - Kibuye	Gravel	1	+0	5+000	5.0	3	3	1	1	1	1	1	1	2	2	1	1	1	1	1	4	73.3	Good	73.3	Good	81.9	Good	81.9	Good	76.4	Good	76.4	Good	90.4	Very Good	90.4	Very Good
4		Nawantale - Kibuye	Gravel	2	5+000	10+000	5.0	3	3	1	1	1	1	1	1	2	2	1	1	1	1	1	4	73.3	Good	73.3	Good	81.9	Good	81.9	Good	76.4	Good	76.4	Good	90.4	Very Good	90.4	Very Good
4		Nawantale - Kibuye	Gravel	3	10+000	15+000	5.0	3	3	1	1	1	1	1	1	2	2	1	1	1	1	1	4	73.3	Good	73.3	Good	81.9	Good	81.9	Good	76.4	Good	76.4	Good	90.4	Very Good	90.4	Very Good
4		Nawantale - Kibuye	Gravel	4	15+000	20+000	5.0	3	3	1	1	1	1	1	1	2	2	1	1	1	1	1	4	73.3	Good	73.3	Good	81.9	Good	81.9	Good	76.4	Good	76.4	Good	90.4	Very Good	90.4	Very Good
4		Nawantale - Kibuye	Gravel	5	20+000	22+700	2.7	3	3	1	1	1	1	1	1	2	2	1	1	1	1	1	4	73.3	Good	73.3	Good	81.9	Good	81.9	Good	76.4	Good	76.4	Good	90.4	Very Good	90.4	Very Good
5		Kasambara - Bugulumbya	Gravel	1	+0	5+000	5.0	3	3	1	1	1	1	1	1	2	2	1	1	1	1	1	4	73.3	Good	73.3	Good	81.9	Good	81.9	Good	76.4	Good	76.4	Good	90.4	Very Good	90.4	Very Good
5		Kasambara - Bugulumbya	Gravel	2	5+000	10+000	5.0	3	3	1	1	1	1	1	1	2	2	1	1	1	1	1	4	73.3	Good	73.3	Good	81.9	Good	81.9	Good	76.4	Good	76.4	Good	90.4	Very Good	90.4	Very Good
5		Kasambara - Bugulumbya	Gravel	3	10+000	15+000	5.0	3	3	1	1	1	1	1	1	2	2	1	1	1	1	1	4	73.3	Good	73.3	Good	81.9	Good	81.9	Good	76.4	Good	76.4	Good	90.4	Very Good	90.4	Very Good
6		Kasambira - Wankole	Gravel	1	+0	5+000	5.0	4	4	1	1	1	1	1	1	5	5	4	4	4	4	1	5	23.9	Very Poor	23.9	Very Poor	17.1	Very Poor	17.1	Very Poor	60.4	Fair	60.4	Fair	90.4	Very Good	90.4	Very Good
6		Kasambira - Wankole	Gravel	2	5+000	8+700	3.7	4	4	1	1	1	1	1	1	5	5	4	4	4	4	1	5	23.9	Very Poor	23.9	Very Poor	17.1	Very Poor	17.1	Very Poor	60.4	Fair	60.4	Fair	90.4	Very Good	90.4	Very Good
7		Naminage - Bulange	Gravel	1	+0	5+000	5.0	4	4	1	1	1	1	1	1	5	5	3	4	3	3	1	5	25.8	Very Poor	25.8	Very Poor	20.9	Very Poor	20.9	Very Poor	60.4	Fair	60.4	Fair	90.4	Very Good	90.4	Very Good
7		Naminage - Bulange	Gravel	2	5+000	10+000	5.0	4	4	1	1	1	1	1	1	5	5	3	4	3	3	1	5	25.8	Very Poor	25.8	Very Poor	20.9	Very Poor	20.9	Very Poor	60.4	Fair	60.4	Fair	90.4	Very Good	90.4	Very Good
8		Namaganda - Bugonda	Gravel	1	+0	5+000	5.0	3	3	1	1	1	1	1	1	2	2	1	1	1	1	1	4	73.3	Good	69.1	Fair	81.9	Good	69.1	Fair	76.4	Good	76.4	Good	90.4	Very Good	90.4	Very Good
8		Namaganda - Bugonda	Gravel	2	5+000	10+000	5.0	3	3	1	1	1	1	1	1	3	4	2	2	2	2	2	4	64.9	Fair	69.1	Fair	56.4	Fair	69.1	Fair	76.4	Good	76.4	Good	90.4	Very Good	90.4	Very Good
9		Namwendwa - Ndaliike	Gravel	1	+0	5+000	5.0	3	3	1	1	1	1	1	1	2	2	2	2	2	2	1	4	71.7	Good	71.7	Good	79.4	Good	79.4	Good	76.4	Good	76.4	Good	90.4	Very Good	90.4	Very Good
9		Namwendwa - Ndaliike	Gravel	2	5+000	8+500	3.5	3	3	1	1	1	1	1	1	2	2	2	2	2	2	1	4	71.7	Good	71.7	Good	79.4	Good	79.4	Good	76.4	Good	76.4	Good	90.4	Very Good	90.4	Very Good
10		Namwendwa - Kyeeya - Buyamba	Gravel	1	+0	5+000	5.0	3	3	1	1	1	1	1	1	2	2	2	2	2	2	1	4	71.7	Good	71.7	Good	79.4	Good	79.4	Good	76.4	Good	76.4	Good	90.4	Very Good	90.4	Very Good
10		Namwendwa - Kyeeya - Buyamba	Gravel	2	5+000	10+000	5.0	3	3	1	1	1	1	1	1	2	2	2	2	2	2	1	4	71.7	Good	71.7	Good	79.4	Good	79.4	Good	76.4	Good	76.4	Good	90.4	Very Good	90.4	Very Good

**AFCAP GEM - RURAL ROAD SECTOR SUSTAINABILITY ASSESSMENT (NOV 2017): SIERRA LEONE - Tonkolili District**

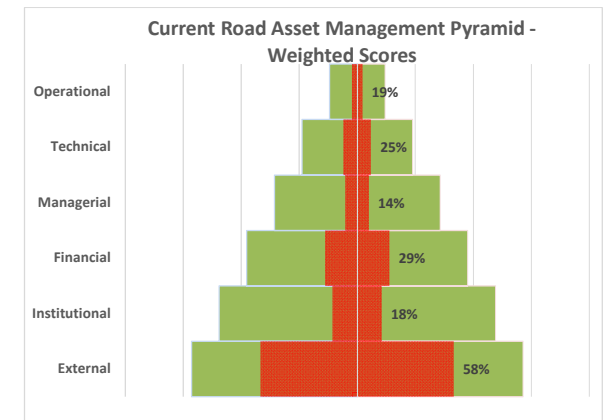
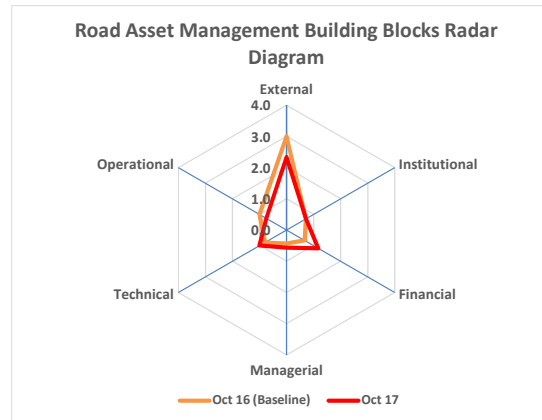
Building Block	#	Item Assessed	Oct 16 (Baseline)	Oct 17
External	1.1	National policy for rural roads		4
	1.2	Existence of rural road maintenance strategy		2
	1.3	Stakeholder consultation	3	3
	1.4	Tabling of budgets		2
	1.5	Reporting back to stakeholders		0
	1.6	Involvement in programmes at local level	3	3
Institutional	2.1	AM policy development	0	0
	2.2	Level of service - existence	0	0
	2.3	Level of service - use	1	1
	2.4	Emergency response plan	2	2
	2.5	Staff roles and responsibilities	1	0
	2.6	Staff training and capacity building	0	1
	2.7	Staff salaries	1	1
Financial	3.1	Provision of road maintenance funding	0	2
	3.2	Budget funding against perceived need	1	1
	3.3	Asset valuation	0	0
	3.4	Budget funding - asset value	1	0
	3.5	Financial forecasting	1	1
	3.6	Accounting system	1	3
Managerial	4.1	AM system	0	1
	4.2	Maintenance intervention levels	0	0
	4.3	Maintenance plans - existence	1	1
	4.4	Maintenance plans - methods used	1	1
	4.5	Maintenance backlog	0	0
	4.6	Traffic forecasting	0	0
	4.7	Capital expenditure - basis for	1	1
Technical	5.1	Road referencing system - existence	1	1
	5.2	Road inventory - existence	2	2
	5.3	Road inventory data	1	0
	5.4	Road condition assessment	0	2
	5.5	Asset utilisation	0	0
Operational	6.1	Service delivery mechanisms	3	3
	6.2	Maintenance planning	0	0
	6.3	Reporting		0
	6.4	Auditing	0	0

Assessment Scoring Criteria:	
<0	Very Poor
0-1	Poor
1-2	Fair
2-3	Good
3-4	Very Good

Weighting Ranking	Building Block	Max. Possible Score	Oct 16 (Baseline)	Oct 17
1	External	4	3.0	2.3
2	Institutional	4	0.7	0.7
3	Financial	4	0.7	1.2
4	Managerial	4	0.4	0.6
5	Technical	4	0.8	1.0
6	Operational	4	1.0	0.8
<b>Road Sector Sustainability Assessment Score</b>			<b>1.3</b>	<b>1.3</b>
<b>Road Sector Sustainability Rating</b>			<b>Fair</b>	<b>Fair</b>
<b>Road Sector Sustainability Index (RSSI)</b>			<b>0.33</b>	<b>0.32</b>

Weighting
0.29
0.24
0.19
0.14
0.10
0.05
1.00

(Scale: 0 - 1)



## AFCAP GEM - RURAL ROAD SECTOR SUSTAINABILITY ASSESSMENT (NOV 2017): SIERRA LEONE - Tonkolili District

### BUILDING BLOCK 1: EXTERNAL

Key objective:	Facilitate delivery of a broad range of benefits to rural communities through effective interaction with external stakeholders.
Element:	AM policy and strategy
Issue:	The existence of an AM policy that is: <ul style="list-style-type: none"> <li>• Relevant to the rural transport sector;</li> <li>• Supported by senior decision makers;</li> <li>• Adopted at the highest level in government.</li> </ul>
Element:	Stakeholder engagement
Issue:	Engagement with stakeholders by means of informed consultations and a culture of open communications and knowledge sharing in order to: <ul style="list-style-type: none"> <li>• Understand their needs and expectations by helping to identify local requirements, alternatives and solutions to problems;</li> <li>• Lobby political support for adequate AM plans and related maintenance funding;</li> <li>• Influence the development of the district's AM strategies;</li> <li>• Communicate the district's programmes and targets;</li> <li>• Assess how the district's performance is rated by stakeholders.</li> </ul>

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
1.1 (a)	Is there a national policy for rural roads which has been adopted by the central government?	YES			0	1	4
1.1 (b)	Does the national policy define the roles and responsibilities of the agencies responsible for managing rural roads?	YES	It however fails to mention anything about the Road Fund			1	
1.1 (c)	Does the national policy identify funding sources that are adequate for maintenance of the rural road network?	YES	15% of total Road Fund income			1	
1.1 (d)	Does the national policy define stakeholder groups to be consulted in the management of rural roads?	YES				1	
1.2 (a)	Is there a national policy for maintenance of rural roads?	YES			0	1	2
1.2 (b)	Does the rural roads maintenance policy require the development of a strategy for undertaking sustainable rural road maintenance?	YES	All Local Councils must develop a financial strategy and submit to Road Fund			1	
1.2 (c)	Does the rural roads maintenance strategy ensure that rural road improvement is linked to a simultaneous commitment to the annual maintenance costs?	NO	On paper YES. But practically, NO. The road Fund does to provide resources regularly, leaving the roads to deteriorate				
1.2 (d)	Does the rural roads maintenance strategy require the rural road agencies to minimise the total costs of ownership by adopting whole-life approaches (leading to optimum balance between capital and recurrent budgets)?	NO					
1.3 (a)	Does the district generally communicate with road users, local inhabitants and local businesses/stakeholders?	YES	Local Councils have Roads Committee.	1		1	
1.3 (b)	Does the district conduct consultations with members of the public (road users, local inhabitants and local businesses) at least annually?	YES	This is done only for new construction, major rehabilitation works and for	1		1	

**Economic Growth through Effective Road Asset Management**

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
1.3 (c)	Does the district use a range of techniques to communicate with stakeholders e.g. surveys, public notices, community radio, media releases, newsletters, telephone hotlines and social media?	YES	Media press releases, newsletters, Village Court Barray meetings, Local Councilors meetings, etc.	1	3	1	3
1.3 (d)	Does the district have developed strategies and guidelines for community consultation and information dissemination?	NO	Planning to develop the guidelines.				
1.4 (a)	Does the district actively seek participation of stakeholders and road users in the preparation of strategic plans, programmes and budgets for road works?	NO			0		2
1.4 (b)	Does the district discuss its strategic plans at council meetings to map out plans for short, medium and long-term road works programmes?	NO					
1.4 (c)	Does the district coordinate inter-sectoral district road development programmes through established council structures?	YES	The Roads Committee consults with all NGOs and Donor agencies interested in roads works.			1	
1.4 (d)	Does the district table road works budgets at council meetings for approval before implementing works?	YES	All Local Councils must develop a financial strategy and submit to Road Fund			1	
1.5 (a)	Does the district table periodic road works roadworks acquittal reports at council meetings for approval?	NO		0	0		0
1.5 (b)	Does the district maintain a public display of road works acquittal reports for accessing by the public?	NO	It is planned that this practice will be introduced.	0			
1.6 (a)	Does the district participate in programmes at provincial/regional and national level and through established council structures?	YES	They are provided this opportunity by support from SLRA and RMFA engineers	1	3	1	3
1.6 (b)	Does the district actively communicate with the local government ministry, the national roads authority and the Road Fund through established structures on road preservation matters?	YES	Through request for funding or technical interventions	1		1	
1.6 ©	??	YES		1		1	

**BUILDING BLOCK 2: INSTITUTIONAL**

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
<p>Key objective: Successful implementation of road asset preservation practice through support of the district executives, an adequate organisational structure, adequate number of trained staff.</p> <p>Element: AM policy and strategy</p> <p>Issue:</p> <ul style="list-style-type: none"> <li>☐ The existence of an AM policy and strategy that is supported by senior leadership;</li> <li>☐ Need to recruit and retain capable staff by offering competitive salaries;</li> <li>☐ An appropriate organisational structure with an adequate complement of appropriately trained staff with the necessary core competencies;</li> <li>☐ The extent to which staff involved in the process understand and support it and are willing to contribute and improve it;</li> <li>☐ KPIs that can be used to measure the quality of the service the agency provides;</li> <li>☐ Means (funding) for outsourcing of all strategic, non-core activities (e.g. instrumented surveys such as roughness and deflection measurements).</li> </ul>							
ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
2.1 (a)	Does the district have a corporate vision and mission statement?	NO	Trying to develop them	0	0		0
2.1 (b)	Does the district's mission statement consider stakeholder needs and expectations?	NO	Not applicable				
2.2(a)	Have the basic levels of service for roads been defined?	NO	Not yet. Its planned	0	0		0
2.2 (b)	Are stakeholders consulted when determining the levels of service?	NO	Not applicable				
2.3 (a)	Is the contribution of the road network (asset value) to the district understood?	YES	Following analysis of results from GEM Socio-economic survey	1	1	1	1
2.3 (b)	Is the cost to fulfil the level of service requirements known?	NO	Not applicable				
2.4 (a)	Are emergency responses understood by key members of staff?	YES	Yes. Because road closure as a result of flooding, broken bridge and culvert.	1	2	1	2
2.4 (b)	Does the district have a formal emergency response plan?	NO	Planning to have that as part of the Maintenance Plan.				
2.4 (c)	Is the safety of infrastructure routinely assessed?	NO	Planning to start this assessment				
2.4 (d)	Are formal debriefs given to staff after severe damage to infrastructure as a result of a traffic accident (e.g. bridge strike) or climate induced event (e.g. washout)?	YES		1		1	
2.5 (a)	Does the district's organisational structure identify roles, responsibilities and competencies of key staff, aligned with its AM policy, strategies, objectives and plans?	NO	No AM policy in place. One is being developed	1	1		0
2.5 (b)	Are the roles, responsibilities and organisational commitment for AM documented and communicated to all relevant people (job descriptions)?	NO	Not applicable				

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
2.5 (c)	Does the district have an adequate complement of appropriately qualified staff with designated responsibilities to undertake its AM mandate?	NO	Not applicable				
2.5 (d)	Is the district able to outsource its non-core activities (e.g. instrumented surveys such as roughness and deflections)?	NO	Yes it has the mandate to do so. But lacks the funds and motivation to do so.				
2.6 (a)	Does the district receive/offer training opportunities for staff?	YES	Yes. But mostly sponsored by RMFA, NGOs and Ministries			1	
2.6 (b)	Does AM specific training occur for primary staff?	NO	SLRA has AM specialists and supports Councils.		0		1
2.6 (c)	Does the district implement an on-going training programme to address required AM competencies?	NO					
2.6 (d)	Is there a formal AM capacity building programme which is routinely monitored?	NO					
2.7 (a)	Are district engineer salaries less than 50% of comparable private sector positions?	YES		1		1	
2.7 (b)	Are district engineer salaries 50-80% of comparable private sector positions?	NO			1		1
2.7 (c)	Are district engineer salaries roughly the same as comparable private sector positions?	NO					
2.7 (d)	Are district engineer salaries greater than comparable private sector positions?	NO					

**BUILDING BLOCK 3: FINANCIAL**

Key objective: The achieve stable, adequate and sustainable funding for maintenance.  
 Element: Financial arrangements  
 Issue:

- A stable, adequate and sustainable source(s) of funding for maintenance;
- Annual asset valuation of road infrastructure assets;
- Costing framework for determining unit costs of works;
- Budgeting and programming processes;
- Prioritised maintenance investment plan;
- Risk strategy to address potential consequences of inadequate funding (e.g. emergency response);
- Financial accounting and auditing of expenditure.

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
3.1 (a)	Does the district depend only on the consolidated fund (own funds) for road maintenance?	NO	Receive funds from Road Funds and NGOs and MDAs			1	
3.1 (b)	Is the funding received from the consolidated fund related to road asset condition and performance?	NO	Lack of adequate road condition report to drive maintenance funding.				
3.1 (c)	Does the district get a fixed share of its maintenance funding requirement from a Road Fund and/or central government?	YES	Yes. But the in flow of maintenance funding is not consistent		0	1	2
3.1 (d)	Does the district get a variable share of its maintenance funding requirement from the Road Fund that is related to road asset condition and performance?	NO	Road Asset condition data has not been used for the determination of maintenance funding				
3.2 (a)	Is the percentage of the budgeted funding obtained < 30 % of that required?	YES		1		1	

**Economic Growth through Effective Road Asset Management**

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
3.2 (b)	Is the percentage of the budgeted funding obtained 30%-59% of that required?	NO			1		1
3.2 (c)	Is the percentage of the budgeted funding obtained 60% - 89% of that required?	NO					
3.2 (d)	Is the percentage of the budgeted funding obtained 90% - 100% of that required?	NO					
3.3 (a)	Does the district carry out asset valuation?	NO			0		0
3.3 (b)	Where the district carries out asset valuation, is the value of the district's road asset decreasing?	NO	Not applicable.				
3.3 (c)	Where the district carries out asset valuation, is the value of the district's road asset stable?	NO	Not applicable.				
3.3 (d)	Where the district carries out asset valuation, is the value of the district's road asset increasing?	NO	Not applicable.				
3.4(a)	Is the percentage of the maintenance funding obtained ≥ 0.1% of the asset value of the road network?	NO	No asset valuation is done so we cant relate the funding received to the road asset value.	1	1		0
3.4 (b)	Is the percentage of the maintenance funding obtained ≥ 0.5% of the asset value of the road network?	NO	Not applicable.				
3.4 (c)	Is the percentage of the maintenance funding obtained ≥ 1 % of the asset value of the road network?	NO	Not applicable.				
3.4 (d)	Is the percentage of the maintenance funding obtained ≥ 1.5 % of the asset value of the road network?	NO	Not applicable.				
3.5 (a)	Does the district carry out annual and multi-annual financial forecasting for maintenance works?	YES		1	1	1	1
3.5 (b)	Are the financial forecasts for maintenance works based on current Asset Management Plan (AMP) outputs?	NO	Still working on developing an Asset Management Plan				
3.5(c)							
3.5(d)							
3.6 (a)	Does the district operate an accounting system?	YES		1	1	1	3
3.6 (b)	Are the accounts audited annually?	YES	Yes. All District and City Councils Budgets, Development Plans, Accounting Systems and Much more are audited Both the Parliamentary Subcommittee and the Auditor Generals Office annually.				
3.6 (c)	Are the accounts published annually?	YES	The accounts are published.				
3.6(d)							

**BUILDING BLOCK 4: MANAGERIAL**

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
Key objective:	Successful implementation of road asset preservation practice through support of the district executives, an adequate organisational structure, adequate number of trained staff						
Element:	Network management						
Issue:	<input checked="" type="checkbox"/> Use of appropriate AM system that contains: <ul style="list-style-type: none"> <li><input type="checkbox"/> Network definition (road and bridge inventory information),</li> <li><input type="checkbox"/> Network condition (roads and bridges)</li> <li><input type="checkbox"/> Network usage (traffic)</li> <li><input type="checkbox"/> Financial/cost information on works activities</li> <li><input type="checkbox"/> Storage, update, analysis and reporting of data collected</li> </ul> <input checked="" type="checkbox"/> Appropriate levels of service and intervention standards that determine gaps in network performance? <input checked="" type="checkbox"/> Prioritised annual, medium (3- 5yrs) and long term (> 5 yrs) maintenance and development plans and related investment plans? <input checked="" type="checkbox"/> A risk management strategy (for unfunded works); <input checked="" type="checkbox"/> Annual reporting on the overall management of the road asset (AM plan); <input checked="" type="checkbox"/> Demand forecasting.						

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
4.1 (a)	Does the district have an AM system(s) in place which can store current and historical asset inventory, condition and asset utilization data (e.g. traffic)?	YES	But this is only available for the GEM pilot network			1	
4.1 (b)	Does the AM system enable road treatment cost and historical maintenance information to be stored and accessed?	NO	GEM network only. The system is a spreadsheet base system				
4.1 (c)	Does the AM system allow for the comparison of the current condition of road assets with intervention levels to determine maintenance requirements?	NO	Intervention Levels are not yet set. Only records extent and intensity of defects		0		1
4.1 (d)	Can the AM system facilitate the prioritisation of road sections requiring maintenance?	NO	GEM network only. The system is a spreadsheet base system which uses different color bands to indicate road conditions, which in turn enables decision making for targeted maintenance intervention				
4.2 (a)	Has the district developed intervention levels for all its principal asset types which require periodic maintenance (carriageway, bridges, and culverts)?	NO	Still planning to do so				
4.2 (b)	Are the intervention levels directly associated with defined levels of service?	NO	Not applicable		1		0
4.2 (c)	Have the intervention levels been determined using an economic analysis?	NO	Not applicable				
4.2 (d)	Have the intervention levels been determined using socio-economic-political (i.e. multi-criteria) analysis?	NO	Not applicable	1			
4.3 (a)	Does the district produce annual maintenance and development plans?	YES				1	

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
4.3 (b)	Does the district produce annual prioritised maintenance and development plans?	NO	Annual maintenance budget is based on maintenance needs. The District annual development and maintenance budget/Plans are done with support from NGO's and are based on community and road maintenance needs. The District annual development and maintenance budget/Plans are done with support from NGO's and are based on community and road maintenance needs		0		1
4.3 (c)	Does the district provide prioritised medium term (3-5 year) maintenance plans?	NO					
4.3 (d)							
4.4 (a)	Does the district keep records of maintenance and development work activities?	YES		1		1	
4.4 (b)	Is maintenance and development prioritised according to asset condition?	NO					
4.4 (c)	Is maintenance and development prioritised using a cost benefit approach?	NO			1		1
4.4 (d)	Is maintenance and development expenditure prioritised using techniques which consider economic and social benefit?	NO					
4.5 (a)	Does the district keep a record of maintenance works backlog?	NO					
4.5 (b)	Does the district have a strategy to reduce maintenance backlog based on a percentage of the available development budget?	NO	Planning to develop one		0		0
4.5 (c)	Does the district prioritise the reduction of maintenance backlog using an economic analysis?	NO					
4.5 (d)	Does the district prioritise the reduction of maintenance backlog using risk management techniques?	NO					
4.6 (a)	Does the district carry out basic demand (traffic) forecasting?	NO					
4.6 (b)	Are the forecasts of traffic demand based on traffic counts carried out in the last 5 years using robust economic indicators (e.g. GDP)?	NO			0		0
4.7 (a)	Does the district schedule capital projects using staff judgement, taking into consideration government policy and political drivers?	YES		1		1	
4.7 (b)	Are projects identified using input from operational staff, estimates of service lives, traffic demand modelling and accident analysis?	NO	Operational staff input and to a limited extent service lives are used. But mostly agro-		1		1
4.7 (c)	Are major capital projects for the next 10 years identified and prioritised taking into account socio-political-economic requirements?	NO					

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
4.7 (d)	Does the district use advanced formalised socio-economic-political decision-making techniques to identify major capital expenditure?	NO					

### BUILDING BLOCK 5: TECHNICAL

Key objective: Identification and description of road assets including inventory, condition data and performance monitoring; and availability of data to network managers.

Element: Road network database

Issue:

- Existence of a road referencing system;
- Existence of a classified road inventory;
- Standard procedures for developing a road inventory, data collection and performance monitoring;
- Use of asset register to store all road asset information.

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
5.1 (a)	Does the district have a road referencing system based on routes and nodes between centres of population?	YES	GEM pilot network only	1		1	
5.1 (b)	Is the road referencing system based on road sections (< 5 km) with homogeneous characteristics?	NO			1		1
5.1 (c)	Is the road referencing system based on sub-sections (homogenous sections of 200 m lengths)?	NO					
5.1 (d)	Is the road referencing system GIS based?	NO					
5.2 (a)	Does the district have an item inventory recording basic road surface types (earth, gravel or sealed)?	YES	GEM pilot network only	1		1	
5.2 (b)	Does the district undertake an inventory of all principal assets (carriageway, shoulders, bridges, culverts, side drains)?	YES	GEM pilot network only	1	2	1	2
5.2 (c)	Does the inventory include the service levels of all principal assets?	NO					
5.2 (d)	Does the district have deterioration models for all principal assets?	NO					
5.3 (a)	Is the road inventory based on assumptions or incomplete data?	NO		1			
5.3 (b)	Is there a system of systematic and documented data collection for all principal assets (carriageway, shoulders, bridges, culverts, side drains) on a road by road basis?	NO	GEM pilot network has a systematic way of collecting data on it. It is planned to expand this to other sections of the network		1		0
5.3 (c)	Is there an established system of systematic and documented data collection for all principal assets (carriageway, shoulders, bridges, culverts, side drains) on a section basis?	NO	GEM pilot network only on a segment by segment bases				

**Economic Growth through Effective Road Asset Management**

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
5.3 (d)	Is there an established system of systematic and documented data collection for all principal assets on a sub-section basis?	NO					
5.4 (a)	Does the district carry out annual visual condition assessment surveys for carriageways, shoulders of gravel and earth roads?	YES	GEM pilot network only			1	
5.4 (b)	Are the visual condition assessments of gravel and earth roads carried out in accordance with well documented, standardised procedures?	YES	GEM pilot network only. Planning to extend to other parts of the rest of the network			1	
5.4 (c)	Does the district measure gravel loss annually?	NO	No. However, within the GEM pilot network, gravel loss is recorded periodically		0		2
5.4 (d)	Are the results of the road condition assessment and other road recorded in a computerised AM system?	NO	Even the GEM pilot network data is only recorded in a payment condition database.				
5.5 (a)	Does the district estimate asset utilization (traffic) on its network?	NO					
5.5 (b)	Does the district measure asset utilization (traffic) annually on its major roads?	NO					
5.5 (c)	Does the district forecast asset utilization across its network from annual measures of utilization of a sampled number of roads?	NO			0		0
5.5 (d)	Does the district assess bottlenecks on its network?	NO					

**BUILDING BLOCK 6: OPERATIONAL**

Key objective: Efficient operations at district level including planning and scheduling of maintenance, procurement of service providers and technical compliance.

Element: Procurement of services

Issue:

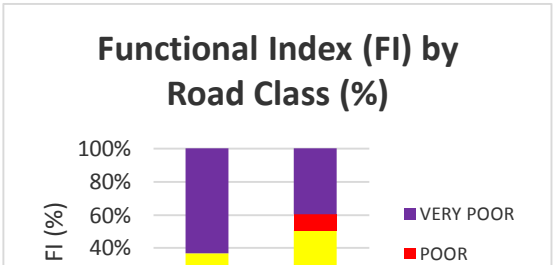
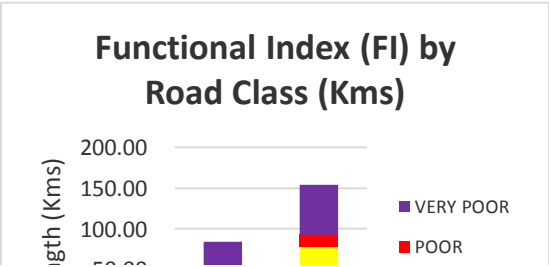
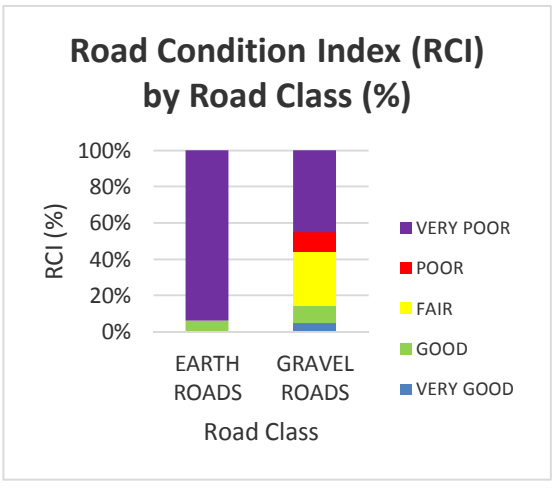
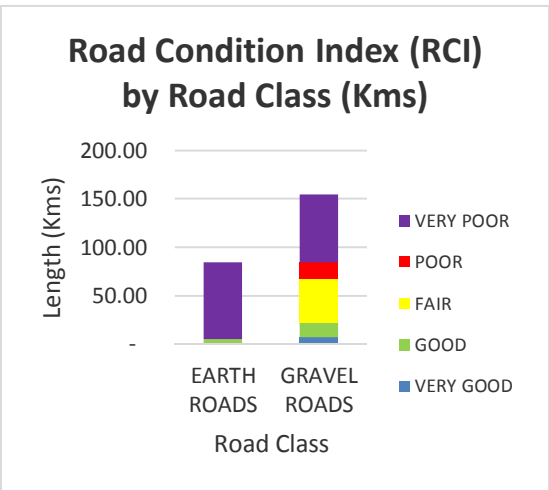
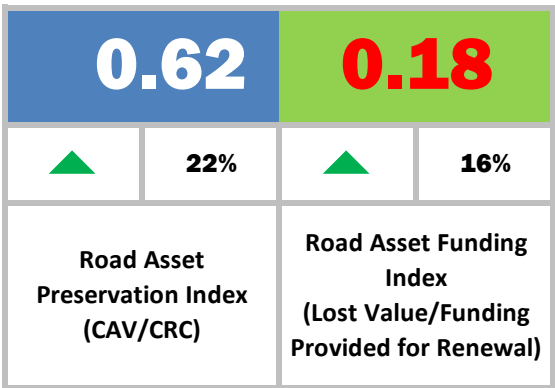
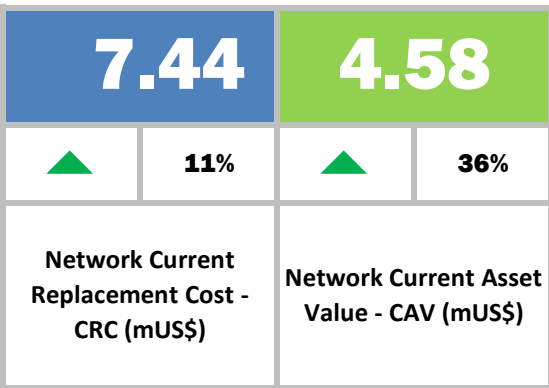
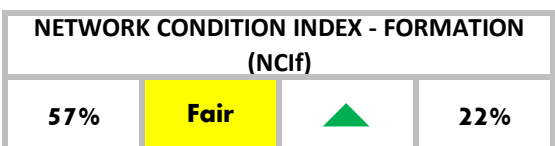
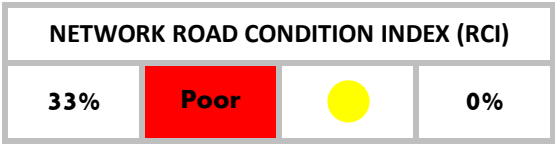
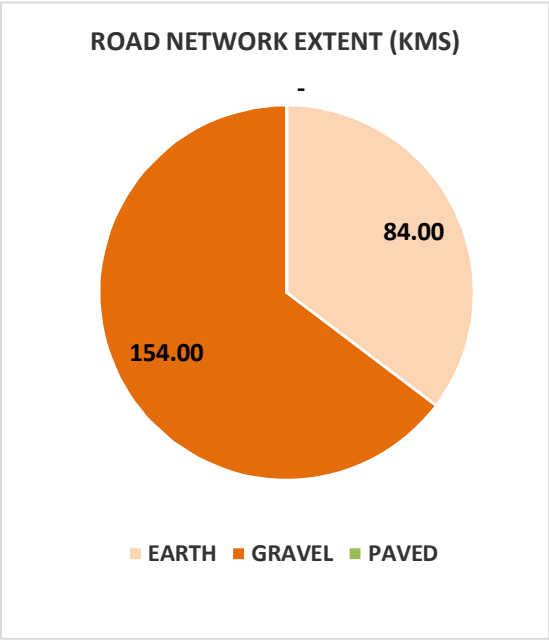
- Appropriate type of contract;
- Outsourcing of strategic, non-core activities;
- Maintenance scheduling of works;
- Auditing of maintenance works.

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
6.1 (a)	Are service delivery roles within the district council clearly allocated?	YES	However, there is lots of interference	1		1	
6.1 (b)	Does the council have provision for outsourcing of non-core activities?	YES	Notional procurement laws allows that	1		1	
6.1 (c)	Are competitive tendering practices used?	YES		1	3	1	3
6.1 (d)	Are service delivery mechanisms reviewed annually to identify risks, benefits and costs of various outsourcing options?	NO					
6.2 (a)	Does the district plan day to day maintenance activities?	NO	Planning to start planning following GEM experience				
6.2 (b)	Are the needs of stakeholders considered when scheduling day to day maintenance?	NO	Not applicable				

Economic Growth through Effective Road Asset Management

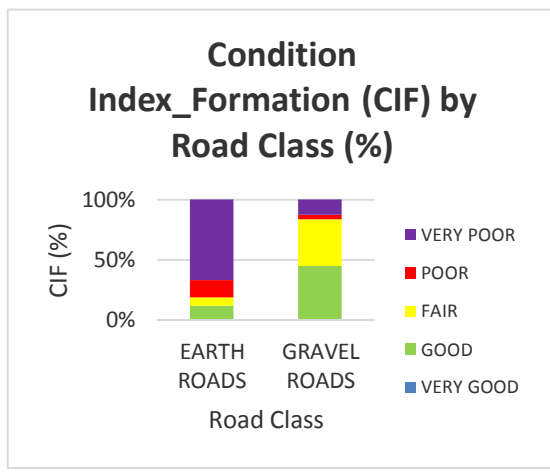
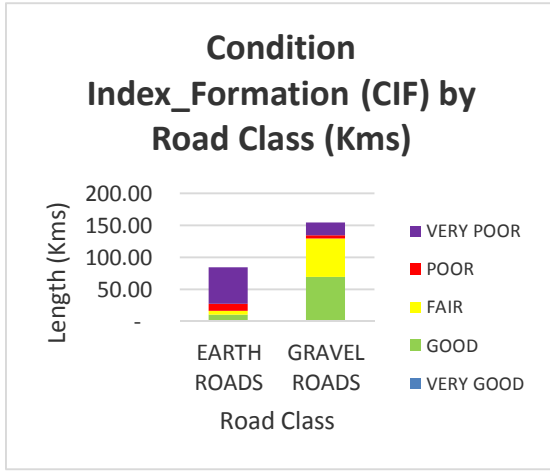
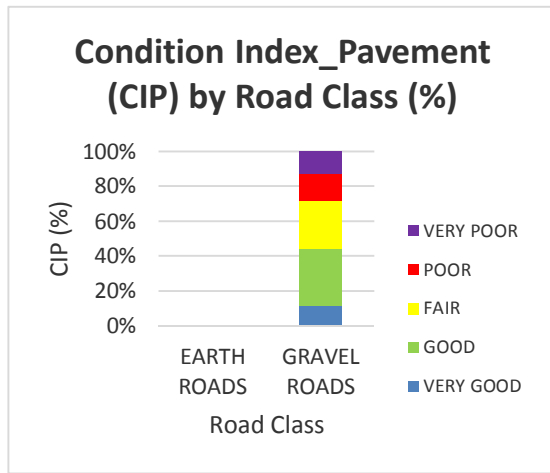
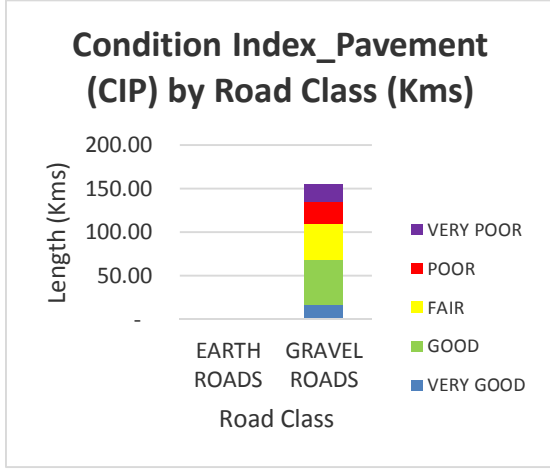
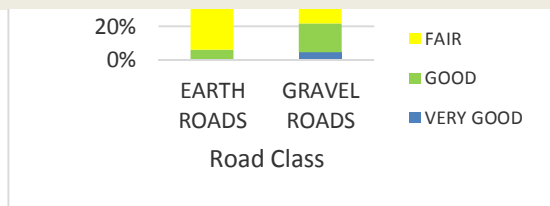
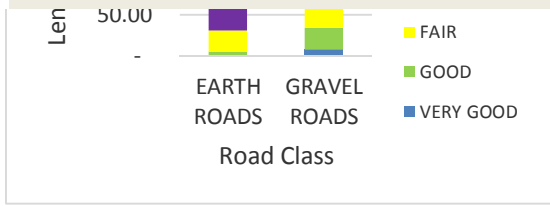
ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
6.2 ©	Is the planning of day to day maintenance optimised in terms of the availability and use of resources?	NO	Not applicable		0		0
6.2 (d)	Is day to day planning of maintenance optimised by considering the availability of resources and impacts on road users?	NO	Not applicable				
6.3 (a)	Does the district prepare day to day reports on road maintenance activities?	NO			0		0
6.3 (b)	Does the district prepare weekly reports on road maintenance activities?	NO					
6.4 (a)	Does the district undertake technical audits of designs?	NO					
6.4 (b)	Does the district regularly undertake technical audits of maintenance, construction and rehabilitation works?	NO			0		0
6.4 (c)	Does the district provide guidelines for undertaking the road audits?	NO	Not applicable				
6.4 (d)	Does the district require service suppliers to be ISO 9000 certified?	NO					

**AFCAP GEM PROJECT: SIERRA LEONE - Tonkolili District (2017)**  
**ROAD CONDITION AND ASSET VALUE DASHBOARD**



**AFCAP GEM PROJECT: SIERRA LEONE - Tonkolili District (2017)**

**ROAD CONDITION AND ASSET VALUE DASHBOARD**



**AFCAP GEM PROJECT: SIERRA LEONE - Tonkolili District (2017)**  
**ROAD CONDITION AND ASSET VALUE TABLES**

**ROAD NETWORK EXTENT**

TYPE	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
EARTH	48.70	84.00	84.00	84.00	84.00	84.00	20%	35%	35%	35%	35%	35%
GRAVEL	190.10	154.00	154.00	154.00	154.00	154.00	80%	65%	65%	65%	65%	65%
PAVED	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
<b>TOTAL</b>	<b>238.80</b>	<b>238.00</b>	<b>238.00</b>	<b>238.00</b>	<b>238.00</b>	<b>238.00</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**ROAD CONDITION INDEX (RCI) BY YEAR**

	EARTH ROADS						GRAVEL ROADS					
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
GOOD	5.00	5.00	5.00	5.00	5.00	5.00	6%	6%	6%	6%	6%	6%
FAIR	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
POOR	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
VERY POOR	79.00	79.00	79.00	79.00	79.00	79.00	94%	94%	94%	94%	94%	94%
<b>TOTAL</b>	<b>-</b>	<b>84.00</b>	<b>84.00</b>	<b>84.00</b>	<b>84.00</b>	<b>84.00</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

	EARTH ROADS						GRAVEL ROADS					
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	6.90	6.90	6.90	6.90	6.90	6.90	4%	4%	4%	4%	4%	4%
GOOD	15.00	15.00	15.00	15.00	15.00	15.00	10%	10%	10%	10%	10%	10%
FAIR	46.00	46.00	46.00	46.00	46.00	46.00	30%	30%	30%	30%	30%	30%
POOR	16.40	16.40	16.40	16.40	16.40	16.40	11%	11%	11%	11%	11%	11%
VERY POOR	69.70	69.70	69.70	69.70	69.70	69.70	45%	45%	45%	45%	45%	45%
<b>TOTAL</b>	<b>-</b>	<b>154.00</b>	<b>154.00</b>	<b>154.00</b>	<b>154.00</b>	<b>154.00</b>	<b>0%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**FUNCTIONAL INDEX (FI) BY YEAR**

	EARTH ROADS						GRAVEL ROADS					
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
GOOD	-	5.00	5.00	5.00	5.00	5.00	0%	6%	6%	6%	6%	6%
FAIR	-	25.80	25.80	25.80	25.80	25.80	0%	31%	31%	31%	31%	31%
POOR	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
VERY POOR	58.20	53.20	53.20	53.20	53.20	53.20	100%	63%	63%	63%	63%	63%
<b>TOTAL</b>	<b>58.20</b>	<b>84.00</b>	<b>84.00</b>	<b>84.00</b>	<b>84.00</b>	<b>84.00</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

	EARTH ROADS						GRAVEL ROADS					
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	17.10	6.90	6.90	6.90	6.90	6.90	10%	4%	4%	4%	4%	4%
GOOD	5.00	26.60	26.60	26.60	26.60	26.60	3%	17%	17%	17%	17%	17%
FAIR	74.40	44.40	44.40	44.40	44.40	44.40	41%	29%	29%	29%	29%	29%
POOR	45.00	15.00	15.00	15.00	15.00	15.00	25%	10%	10%	10%	10%	10%
VERY POOR	38.30	61.10	61.10	61.10	61.10	61.10	21%	40%	40%	40%	40%	40%
<b>TOTAL</b>	<b>179.80</b>	<b>154.00</b>	<b>154.00</b>	<b>154.00</b>	<b>154.00</b>	<b>154.00</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**PAVEMENT CONDITION INDEX (PCI) BY YEAR**

	EARTH ROADS						GRAVEL ROADS					
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	-	-	-	-	-	-	-	-	-	-	-	-
GOOD	-	-	-	-	-	-	-	-	-	-	-	-
FAIR	-	-	-	-	-	-	-	-	-	-	-	-
POOR	-	-	-	-	-	-	-	-	-	-	-	-
VERY POOR	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTAL</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>

	EARTH ROADS						GRAVEL ROADS					
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	17.10	17.10	17.10	17.10	17.10	17.10	10%	11%	11%	11%	11%	11%
GOOD	37.50	50.80	50.80	50.80	50.80	50.80	21%	33%	33%	33%	33%	33%
FAIR	62.50	41.70	41.70	41.70	41.70	41.70	35%	27%	27%	27%	27%	27%
POOR	46.30	24.40	24.40	24.40	24.40	24.40	26%	16%	16%	16%	16%	16%
VERY POOR	16.40	20.00	20.00	20.00	20.00	20.00	9%	13%	13%	13%	13%	13%
<b>TOTAL</b>	<b>179.80</b>	<b>154.00</b>	<b>154.00</b>	<b>154.00</b>	<b>154.00</b>	<b>154.00</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**FORMATION CONDITION INDEX (FCI) BY YEAR**

	EARTH ROADS						GRAVEL ROADS					
	KMS						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
GOOD	5.80	10.00	10.00	10.00	10.00	10.00	10%	12%	12%	12%	12%	12%
FAIR	-	5.80	5.80	5.80	5.80	5.80	0%	7%	7%	7%	7%	7%
POOR	5.00	11.80	11.80	11.80	11.80	11.80	9%	14%	14%	14%	14%	14%
VERY POOR	47.40	56.40	56.40	56.40	56.40	56.40	81%	67%	67%	67%	67%	67%
<b>TOTAL</b>	<b>58.20</b>	<b>84.00</b>	<b>84.00</b>	<b>84.00</b>	<b>84.00</b>	<b>84.00</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**AFCAP GEM PROJECT: SIERRA LEONE - Tonkolili District (2017)**

**ROAD CONDITION AND ASSET VALUE TABLES**

	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
VERY GOOD	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
GOOD	22.10	68.70	68.70	68.70	68.70	68.70	12%	45%	45%	45%	45%	45%
FAIR	16.70	60.30	60.30	60.30	60.30	60.30	9%	39%	39%	39%	39%	39%
POOR	40.20	5.00	5.00	5.00	5.00	5.00	22%	3%	3%	3%	3%	3%
VERY POOR	100.80	20.00	20.00	20.00	20.00	20.00	56%	13%	13%	13%	13%	13%
<b>TOTAL</b>	<b>179.80</b>	<b>154.00</b>	<b>154.00</b>	<b>154.00</b>	<b>154.00</b>	<b>154.00</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**NETWORK CONDITION INDICES BY YEAR**

	PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021
NETWORK RCI	33%	33%	33%	33%	33%	33%
% MOVE		0%				
NETWORK FI	41%	38%	38%	38%	38%	38%
% MOVE		-3%				
NETWORK CIP	52%	64%	64%	64%	64%	64%
% MOVE		12%				
NETWORK CIF	35%	57%	57%	57%	57%	57%
% MOVE		22%				

**ASSET PRESERVATION NEEDS BY YEAR**

	MIL US\$						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
ROUTINE	0.48	0.48	0.48	0.48	0.48	0.48	24%	35%	35%	35%	35%	35%
% MOVE		0%						11%				
PERIODIC	0.79	0.53	0.53	0.53	0.53	0.53	40%	39%	39%	39%	39%	39%
% MOVE								-2%				
UPGRADING	0.15	0.26	0.26	0.26	0.26	0.26	8%	19%	19%	19%	19%	19%
REHABILITATION	0.53	0.09	0.09	0.09	0.09	0.09	27%	7%	7%	7%	7%	7%
<b>TOTAL</b>	<b>1.95</b>	<b>1.36</b>	<b>1.36</b>	<b>1.36</b>	<b>1.36</b>	<b>1.36</b>						

**BUDGET BY YEAR**

	MIL US\$						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
ROUTINE	0.02	0.02	-	-	-	-	4%	4%	0%	0%	0%	0%
% MOVE								0%				
PERIODIC	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
% MOVE								0%				
UPGRADING	-	-	-	-	-	-	0%	0%	0%	0%	0%	0%
REHABILITATION	0.50	0.50	-	-	-	-	2273%	2273%	0%	0%	0%	0%
<b>TOTAL</b>	<b>0.52</b>	<b>0.52</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>						

**ACTUAL EXPENDITURE BY YEAR**

	MIL US\$						PERCENT					
	2016 - BASELINE	2017	2018	2019	2020	2021	2016 - BASELINE	2017	2018	2019	2020	2021
ROUTINE	0.02	0.02	0.02	-	-	-	4%	4%	100%	#DIV/0!	#DIV/0!	#DIV/0!
PERIODIC	-	-	-	-	-	-	0%	0%	0%	#DIV/0!	#DIV/0!	#DIV/0!
UPGRADING	-	-	-	-	-	-	0%	0%	0%	#DIV/0!	#DIV/0!	#DIV/0!
REHABILITATION	0.50	0.50	-	-	-	-	96%	96%	0%	#DIV/0!	#DIV/0!	#DIV/0!
<b>TOTAL</b>	<b>0.52</b>	<b>0.52</b>	<b>0.02</b>	<b>-</b>	<b>-</b>	<b>-</b>						

**ASSET VALUATION BY YEAR**

	MIL US\$/KMS					
	2016 - BASELINE	2017	2018	2019	2020	2021
CURRENT REPLACEMENT COST	6.67	7.44	7.44	7.44	7.44	7.44
% MOVE		11%				
THRESHOLD VALUE REQUIRED	4.67	5.20	5.20	5.20	5.20	5.20
DEPRECIATED REMAINING VALUE	3.36	4.58	4.58	4.58	4.58	4.58
% MOVE		36%				
DEPRECIATED/LOST VALUE	3.31	2.86	2.86	2.86	2.86	2.86
LENGTH < THRESHOLD VALUE		115.30	115.30	115.30	115.30	115.30

**ASSET SUSTAINABILITY RATIOS AND INDICES**

	2016 - BASELINE	2017	2018	2019	2020	2021
Road Asset Preservation Index	0.50	0.62	0.62	0.62	0.62	0.62
% MOVE		22%	0%			
Road Asset Preservation Funding	0.15	0.18	-	-	-	-
% MOVE		16%	-100%			

**AFCAP GEM PROJECT: SIERRA LEONE - Tonkolili District (2017)  
ASSET VALUE CALCULATION**

BASIC INFORMATION ON ROAD AND SECTIONS										CURRENT REPLACEMENT COST							EXPECTED THRESHOLD VALUE						CURRENT ASSET VALUE						ANALYSIS			
GEM Road No.	Road No.	Road Name	Road Type	Segment No.	Start Km	End Km	Length (km)	Expected Useful Life - EUL (Yrs)		Gravel Road CRC Cost/Km (\$)	CRC Cost/Km: Formation (\$)	CRC Cost/Km: Pavement (\$)	Formation CRC Cost (\$)	Pavement CRC Cost (\$)	Current Replacement Cost (\$)	Min. Threshold Condition - Rating		Remaining Useful Life (RUL) at Threshold Condition (Yrs)		Depreciated Remaining Cost (DRC) at Threshold Condition (\$)		Asset Value at Threshold Condition (\$)	Current Condition Rating		Remaining Useful Life (RUL) at Current Condition (Yrs)		Depreciated Remaining Cost (DRC) at Current Condition (\$)		Current Asset Value (\$)	Current Asset Value as % of Min. Threshold Value	Roads with Condition Less than Permissible (Kms)	
								Formation	Pavement							Formation	Pavement	Formation	Pavement	Formation	Pavement		Formation	Pavement	Formation	Pavement	Formation	Pavement				Formation
1	F1201	Masingbi - Mayolla	Gravel	1	+0	5+000	5.00	50	7	35 000.00	19 250.00	15 750.00	96 250.00	78 750.00	175 000.00	Fair	Fair	35.0	4.9	67 375.00	55 125.00	122 500.00	Good	Good	42.5	6.0	81 812.50	66 937.50	148 750.00	85%	121%	-
1	F1201	Masingbi - Mayolla	Gravel	2	5+000	9+400	4.40	50	7	35 000.00	19 250.00	15 750.00	84 700.00	69 300.00	154 000.00	Fair	Fair	35.0	4.9	59 290.00	48 510.00	107 800.00	Fair	Poor	35.0	3.5	59 290.00	34 650.00	93 940.00	61%	87%	4.40
2	F1202	Makoni - Manasie	Gravel	1	+0	5+200	5.20	50	7	35 000.00	19 250.00	15 750.00	100 100.00	81 900.00	182 000.00	Fair	Fair	35.0	4.9	70 070.00	57 330.00	127 400.00	Good	Very Good	42.5	6.7	85 085.00	77 805.00	162 890.00	90%	128%	-
3a	F1203A	Makoni Line - Mamansu Sanka	Gravel	1	+0	5+000	5.00	50	7	35 000.00	19 250.00	15 750.00	96 250.00	78 750.00	175 000.00	Fair	Fair	35.0	4.9	67 375.00	55 125.00	122 500.00	Good	Good	42.5	6.0	81 812.50	66 937.50	148 750.00	85%	121%	-
3a	F1203A	Makoni Line - Mamansu Sanka	Gravel	2	5+000	10+000	5.00	50	7	35 000.00	19 250.00	15 750.00	96 250.00	78 750.00	175 000.00	Fair	Fair	35.0	4.9	67 375.00	55 125.00	122 500.00	Good	Good	42.5	6.0	81 812.50	66 937.50	148 750.00	85%	121%	-
3a	F1203A	Makoni Line - Mamansu Sanka	Gravel	3	10+000	15+800	5.80	50	7	35 000.00	19 250.00	15 750.00	111 650.00	91 350.00	203 000.00	Fair	Fair	35.0	4.9	78 155.00	63 945.00	142 100.00	Fair	Fair	35.0	4.9	78 155.00	63 945.00	142 100.00	70%	100%	-
3b	F1203B	Masingbi - MS Junction	Gravel	1	+0	5+000	5.00	50	7	35 000.00	19 250.00	15 750.00	96 250.00	78 750.00	175 000.00	Fair	Fair	35.0	4.9	67 375.00	55 125.00	122 500.00	Very Poor	Very Poor	15.0	2.1	28 875.00	23 625.00	52 500.00	30%	43%	5.00
3b	F1203B	Masingbi - MS Junction	Gravel	2	5+000	11+400	6.40	50	7	35 000.00	19 250.00	15 750.00	123 200.00	100 800.00	224 000.00	Fair	Fair	35.0	4.9	86 240.00	70 560.00	156 800.00	Fair	Fair	35.0	4.9	86 240.00	70 560.00	156 800.00	70%	100%	-
4	F1204	Makali - Makong	Earth	1	+0	5+000	5.00	n/a	7	35 000.00	19 250.00	15 750.00	96 250.00	0.00	96 250.00	Fair	n/a	35.0	-	67 375.00	-	67 375.00	Poor	n/a	25.0	-	48 125.00	-	48 125.00	50%	71%	5.00
4	F1204	Makali - Makong	Earth	2	5+000	9+500	4.50	n/a	7	35 000.00	19 250.00	15 750.00	86 625.00	0.00	86 625.00	Fair	n/a	35.0	-	60 637.50	-	60 637.50	Poor	n/a	25.0	-	43 312.50	-	43 312.50	50%	71%	4.50
5	F1205	Matotoka - Mangebana - Mathamp	Gravel	1	+0	5+000	5.00	50	7	35 000.00	19 250.00	15 750.00	96 250.00	78 750.00	175 000.00	Fair	Fair	35.0	4.9	67 375.00	55 125.00	122 500.00	Fair	Poor	35.0	3.5	67 375.00	39 375.00	106 750.00	61%	87%	5.00
5	F1205	Matotoka - Mangebana - Mathamp	Gravel	2	5+000	10+000	5.00	50	7	45 000.00	20 250.00	24 750.00	101 250.00	123 750.00	225 000.00	Fair	Fair	35.0	4.9	70 875.00	86 625.00	157 500.00	Good	Fair	42.5	4.9	86 062.50	86 625.00	172 687.50	77%	110%	-
5	F1205	Matotoka - Mangebana - Mathamp	Gravel	3	10+000	15+000	5.00	50	7	45 000.00	20 250.00	24 750.00	101 250.00	123 750.00	225 000.00	Fair	Fair	35.0	4.9	70 875.00	86 625.00	157 500.00	Good	n/a	42.5	-	86 062.50	-	86 062.50	38%	55%	5.00
5	F1205	Matotoka - Mangebana - Mathamp	Gravel	4	15+000	20+800	5.80	50	7	45 000.00	20 250.00	24 750.00	117 450.00	143 550.00	261 000.00	Fair	Fair	35.0	4.9	82 215.00	100 485.00	182 700.00	Very Poor	n/a	15.0	-	35 235.00	-	35 235.00	14%	19%	5.80
6	F1206	Matotoka - Mathonkara - Makelleh	Gravel	1	+0	5+000	5.00	50	7	45 000.00	20 250.00	24 750.00	101 250.00	123 750.00	225 000.00	Fair	Fair	35.0	4.9	70 875.00	86 625.00	157 500.00	Good	Very Good	42.5	6.7	86 062.50	117 562.50	203 625.00	91%	129%	-
6	F1206	Matotoka - Mathonkara - Makelleh	Gravel	2	5+000	10+000	5.00	50	7	45 000.00	20 250.00	24 750.00	101 250.00	123 750.00	225 000.00	Fair	Fair	35.0	4.9	70 875.00	86 625.00	157 500.00	Good	Poor	42.5	3.5	86 062.50	61 875.00	147 937.50	66%	94%	5.00
6	F1206	Matotoka - Mathonkara - Makelleh	Gravel	3	10+000	15+000	5.00	50	7	35 000.00	19 250.00	15 750.00	96 250.00	78 750.00	175 000.00	Fair	Fair	35.0	4.9	67 375.00	55 125.00	122 500.00	Fair	Fair	35.0	4.9	67 375.00	55 125.00	122 500.00	70%	100%	-
6	F1206	Matotoka - Mathonkara - Makelleh	Earth	4	15+000	20+000	5.00	50	n/a	35 000.00	19 250.00	15 750.00	96 250.00	0.00	96 250.00	Fair	n/a	35.0	-	67 375.00	-	67 375.00	Very Poor	n/a	15.0	-	28 875.00	-	28 875.00	30%	43%	5.00
6	F1206	Matotoka - Mathonkara - Makelleh	Earth	5	20+000	24+000	4.00	50	n/a	35 000.00	19 250.00	15 750.00	77 000.00	0.00	77 000.00	Fair	n/a	35.0	-	53 900.00	-	53 900.00	Very Poor	n/a	15.0	-	23 100.00	-	23 100.00	30%	43%	4.00
7	F1207	Mayepoh - Maraka - Rapoli	Gravel	1	+0	5+000	5.00	50	7	35 000.00	19 250.00	15 750.00	96 250.00	78 750.00	175 000.00	Fair	Fair	35.0	4.9	67 375.00	55 125.00	122 500.00	Good	Good	42.5	6.0	81 812.50	66 937.50	148 750.00	85%	121%	-
7	F1207	Mayepoh - Maraka - Rapoli	Gravel	2	5+000	10+000	5.00	50	7	35 000.00	19 250.00	15 750.00	96 250.00	78 750.00	175 000.00	Fair	Fair	35.0	4.9	67 375.00	55 125.00	122 500.00	Good	Good	42.5	6.0	81 812.50	66 937.50	148 750.00	85%	121%	-
7	F1207	Mayepoh - Maraka - Rapoli	Gravel	3	10+000	15+000	5.00	50	7	35 000.00	19 250.00	15 750.00	96 250.00	78 750.00	175 000.00	Fair	Fair	35.0	4.9	67 375.00	55 125.00	122 500.00	Good	Good	42.5	6.0	81 812.50	66 937.50	148 750.00	85%	121%	-
7	F1207	Mayepoh - Maraka - Rapoli	Earth	4	15+000	20+000	5.00	50	n/a	35 000.00	19 250.00	15 750.00	96 250.00	0.00	96 250.00	Fair	n/a	35.0	-	67 375.00	-	67 375.00	Good	n/a	42.5	-	81 812.50	-	81 812.50	85%	121%	-
7	F1207	Mayepoh - Maraka - Rapoli	Earth	5	20+000	25+000	5.00	50	n/a	35 000.00	19 250.00	15 750.00	96 250.00	0.00	96 250.00	Fair	n/a	35.0	-	67 375.00	-	67 375.00	Very Poor	n/a	15.0	-	28 875.00	-	28 875.00	30%	43%	5.00
8	F1208	Magbolu Ferry - Yele	Earth	1	+0	5+000	5.00	50	n/a	35 000.00	19 250.00	15 750.00	96 250.00	0.00	96 250.00	Fair	n/a	35.0	-	67 375.00	-	67 375.00	Very Poor	n/a	15.0	-	28 875.00	-	28 875.00	30%	43%	5.00
8	F1208	Magbolu Ferry - Yele	Earth	2	5+000	10+000	5.00	50	n/a	35 000.00	19 250.00	15 750.00	96 250.00	0.00	96 250.00	Fair	n/a	35.0	-	67 375.00	-	67 375.00	Very Poor	n/a	15.0	-	28 875.00	-	28 875.00	30%	43%	5.00
8	F1208	Magbolu Ferry - Yele	Gravel	3	10+000	15+000	5.00	50	7	35 000.00	19 250.00	15 750.00	96 250.00	78 750.00	175 000.00	Fair	Fair	35.0	4.9	67 375.00	55 125.00	122 500.00	Poor	Poor	25.0	3.5	48 125.00	39 375.00	87 500.00	50%	71%	5.00
8	F1208	Magbolu Ferry - Yele	Gravel	4	15+000	20+000	5.00	50	7	35 000.00	19 250.00	15 750.00	96 250.00	78 750.00	175 000.00	Fair	Fair	35.0	4.9	67 375.00	55 125.00	122 500.00	Fair	Fair	35.0	4.9	67 375.00	55 125.00	122 500.00	70%	100%	-
8	F1208	Magbolu Ferry - Yele	Gravel	5	20+000	25+000	5.00	50	7	35 000.00	19 250.00	15 750.00	96 250.00	78 750.00	175 000.00	Fair	Fair	35.0	4.9	67 375.00	55 125.00	122 500.00	Fair	Good	35.0	6.0	67 375.00	66 937.50	134 312.50	77%	110%	-
8	F1208	Magbolu Ferry - Yele	Gravel	6	25+000	26+700	1.70	50	7	35 000.00	19 250.00	15 750.00	32 725.00	26 775.00	59 500.00	Fair	Fair	35.0	4.9	22 907.50	18 742.50	41 650.00	Fair	Good	35.0	6.0	22 907.50	22 758.75	45 666.25	77%	110%	-
9	F1209	Magburaka - Magbas	Gravel	1	+0	5+000	5.00	50	7	35 000.00	19 250.00	15 750.00	96 250.00	78 750.00	175 000.00	Fair	Fair	35.0	4.9	67 375.00	55 125.00	122 500.00	Fair	Poor	35.0	3.5	67 375.00	39 375.00	106 750.00	61%	87%	5.00
9	F1209	Magburaka - Magbas	Gravel	2	5+000	7+500	2.50	50	7	35 000.00	19 250.00	15 750.00	48 125.00	39 375.00	87 500.00	Fair	Fair	35.0	4.9	33 687.50	27 562.50	61 250.00	Fair	Good	35.0	6.0	33 687.50	33 468.75	67 156.25	77%	110%	-
10	F1210	Matham - Masanga	Gravel	1	+0	5+000	5.00	50	7	35 000.00	19 250.00	15 750.00	96 250.00	78 750.00	175 000.00	Fair	Fair	35.0	4.9	67 375.00	55 125.00	122 500.00	Good	Very Good	42.5	6.7	81 812.50	74 812.50	156 625.00	90%	128%	-
10	F1210	Matham - Masanga	Gravel	2	5+000	6+900	1.90	50	7	35 000.00	19 250.00	15 750.00	36 575.00	29 925.00	66 500.00	Fair	Fair	35.0	4.9	25 602.50	20 947.50	46 550.00	Good	Very Good	42.5	6.7	31 088.75	28 428.75	59 517.50	90%	128%	-
11	F1211	Matham - Kaimaroh - Mabontor	Gravel	1	+0	5+000	5.00	50	7	35 000.00	19 250.00	15 750.00	96 250.00	78 750.00	175 000.00	Fair	Fair	35.0	4.9	67 375.00	55 125.00	122 500.00	Very Poor	Very Poor	15.0	2.1	28 875.00	23 625.00	52 500.00	30%	43%	5.00
11	F1211	Matham - Kaimaroh - Mabontor	Gravel	2</																												

**AFCAP GEM PROJECT: SIERRA LEONE - Tonkolili District (2017)**

**ASSET VALUATION DATA**

**Expected Useful Life**

Gravel Pavement	7 years
Formation	50 yrs

**Costs per Km**

Total CRC/Km Gravel Road	35 000.00
Formation	55% 19 250.00 US\$
Gravel Pavement	45% 15 750.00 US\$
Routine Maintenance	2 000.00 US\$
Periodic Maintenance - Regravel	12 600.00 US\$
Rehabilitation	18 900.00 US\$
Upgrading	15 750.00 US\$

**Min Threshold Conditions**

Gravel Layer	Fair
Formation	Fair

**Road Maintenance and Development Needs Parameters**

	2016 Baseline	2017	2018	2019	2020	2021
% of Network to Maintain	100%	100%	100%	100%	100%	100%
% of Fair for Periodic	100%	100%	100%	100%	100%	100%
% of Poor and V.Poor for Rehab	50%	50%	50%	50%	50%	50%
% of Earth Roads to Upgrade	20%	20%	20%	20%	20%	20%

**Costs per Km (Actual)**

Routine Maintenance	85.00 US\$
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**Budget History (million US\$)**

	2016 Baseline	2017	2018	2019	2020	2021
Routine Maintenance	0.02	0.02	-	-	-	-
Periodic Maintenance	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-
Rehabilitation	0.50	0.50	-	-	-	-
<b>Total</b>	<b>0.52</b>	<b>0.52</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

**Actual Expenditure (million US\$)**

	2016 Baseline	2017	2018	2019	2020	2021
Routine Maintenance	0.02	0.02	-	-	-	-
Periodic Maintenance	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-
Rehabilitation	0.50	0.50	-	-	-	-
<b>Total</b>	<b>0.52</b>	<b>0.52</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>



**AFCAP GEM - RURAL ROAD SECTOR SUSTAINABILITY ASSESSMENT (NOV 2017): WESTERN CAPE - RSA**

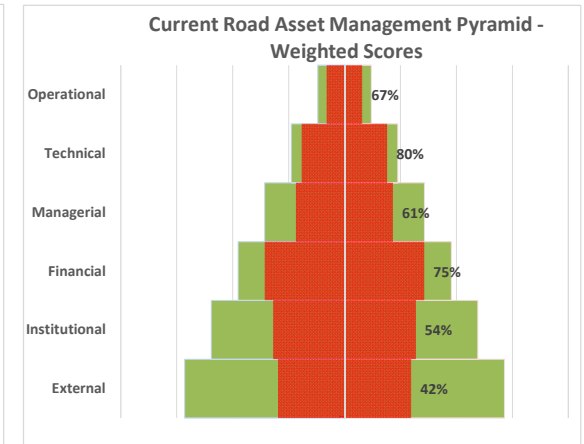
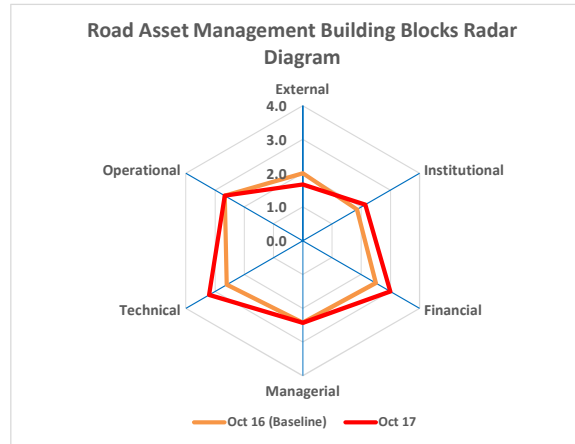
Building Block	#	Item Assessed	Oct 16 (Baseline)	Oct 17
External	1.1	National policy for rural roads		2
	1.2	Existence of rural road maintenance strategy		0
	1.3	Stakeholder consultation	2	1
	1.4	Tabling of budgets		3
	1.5	Reporting back to stakeholders		2
	1.6	Involvement in programmes at local level	2	2
Institutional	2.1	AM policy development	2	3
	2.2	Level of service - existence	2	2
	2.3	Level of service - use	3	4
	2.4	Emergency response plan	3	3
	2.5	Staff roles and responsibilities	1	1
	2.6	Staff training and capacity building	1	1
	2.7	Staff salaries	1	1
Financial	3.1	Provision of road maintenance funding	3	3
	3.2	Budget funding against perceived need	1	1
	3.3	Asset valuation	2	2
	3.4	Budget funding - asset value	3	4
	3.5	Financial forecasting	3	3
	3.6	Accounting system	3	4
Managerial	4.1	AM system	3	4
	4.2	Maintenance intervention levels	3	3
	4.3	Maintenance plans - existence	3	4
	4.4	Maintenance plans - methods used	3	4
	4.5	Maintenance backlog	2	2
	4.6	Traffic forecasting	2	2
	4.7	Capital expenditure - basis for	1	1
Technical	5.1	Road referencing system - existence	1	1
	5.2	Road inventory - existence	2	2
	5.3	Road inventory data	3	3
	5.4	Road condition assessment	3	4
	5.5	Asset utilisation	4	4
Operational	6.1	Service delivery mechanisms	3	3
	6.2	Maintenance planning	3	4
	6.3	Reporting		2
	6.4	Auditing	2	2

Assessment Scoring Criteria:	
< 0	Very Poor
0-1	Poor
1-2	Fair
2-3	Good
3-4	Very Good

Weighting Ranking	Building Block	Max. Possible Score	Oct 16 (Baseline)	Oct 17
1	External	4	2.0	1.7
2	Institutional	4	1.9	2.1
3	Financial	4	2.5	3.0
4	Managerial	4	2.4	2.4
5	Technical	4	2.6	3.2
6	Operational	4	2.7	2.7
<b>Road Sector Sustainability Assessment Score</b>			<b>2.2</b>	<b>2.3</b>
<b>Road Sector Sustainability Rating</b>			<b>Good</b>	<b>Good</b>
<b>Road Sector Sustainability Index (RSSI)</b>			<b>0.55</b>	<b>0.58</b>

Weighting
0.29
0.24
0.19
0.14
0.10
0.05
1.00

(Scale: 0 - 1)



## AFCAP GEM - RURAL ROAD SECTOR SUSTAINABILITY ASSESSMENT (NOV 2017): WESTERN CAPE - RSA

### BUILDING BLOCK 1: EXTERNAL

Key objective:	Facilitate delivery of a broad range of benefits to rural communities through effective interaction with external stakeholders.
Element:	AM policy and strategy
Issue:	The existence of an AM policy that is: <ul style="list-style-type: none"> <li>• Relevant to the rural transport sector;</li> <li>• Supported by senior decision makers;</li> <li>• Adopted at the highest level in government.</li> </ul>
Element:	Stakeholder engagement
Issue:	Engagement with stakeholders by means of informed consultations and a culture of open communications and knowledge sharing in order to: <ul style="list-style-type: none"> <li>• Understand their needs and expectations by helping to identify local requirements, alternatives and solutions to problems;</li> <li>• Lobby political support for adequate AM plans and related maintenance funding;</li> <li>• Influence the development of the district's AM strategies;</li> <li>• Communicate the district's programmes and targets;</li> <li>• Assess how the district's performance is rated by stakeholders.</li> </ul>

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
1.1 (a)	Is there a national policy for rural roads which has been adopted by the central government?	YES				1	2
1.1 (b)	Does the national policy define the roles and responsibilities of the agencies responsible for managing rural roads?	YES				1	
1.1 (c)	Does the national policy identify funding sources that are adequate for maintenance of the rural road network?	NO			0		
1.1 (d)	Does the national policy define stakeholder groups to be consulted in the management of rural roads?	NO					
1.2 (a)	Is there a national policy for maintenance of rural roads?	YES				1	2
1.2 (b)	Does the rural roads maintenance policy require the development of a strategy for undertaking sustainable rural road maintenance?	YES				1	
1.2 (c)	Does the rural roads maintenance strategy ensure that rural road improvement is linked to a simultaneous commitment to the annual maintenance costs?	NO			1		
1.2 (d)	Does the rural roads maintenance strategy require the rural road agencies to minimise the total costs of ownership by adopting whole-life approaches (leading to optimum balance between capital and recurrent budgets)?	NO		1			
1.3 (a)	Does the agency generally communicate with road users, local inhabitants and local businesses/stakeholders?	YES		1		1	1
1.3 (b)	Does the agency conduct consultations with members of the public (road users, local inhabitants and local businesses) at least annually?	NO		1			
					2		

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
1.3 (c)	Does the agency use a range of techniques to communicate with stakeholders e.g. surveys, public notices, community radio, media releases, newsletters, telephone hotlines and social media?	NO					
1.3 (d)	Does the agency have developed strategies and guidelines for community consultation and information dissemination?	NO					
1.4 (a)	Does the agency actively seek participation of local stakeholders and road users in the preparation of strategic plans, programmes and budgets for road works?	YES				1	
1.4 (b)	Does the agency present its strategic plans at Ministry/Parliament meetings to map out plans for short, medium and long term programmes?	YES			0	1	3
1.4 (c)	Does the agency actively participate in inter-sectoral/ministerial and inter-agency district development programmes at regional and national level through established structures?	YES				1	
1.4 (d)	Does the agency table road budgets at ministry meetings before implementing works?	NO					
1.5 (a)	Does the agency table periodic roadworks progress reports to the Ministry for information?	YES		1		1	
1.5 (b)	Does the agency maintain a public display of road works acquittal reports for accessing by the public?	YES		1	2	1	2
1.6 (a)	Does the agency actively communicate with the local government ministry, districts and the Road Fund through established structures on road preservation matters?	YES		1	2	1	2
1.6 (b)	Does the agency participate through established structures at regional and national level in development programmes for other sectors?	YES		1		1	

**BUILDING BLOCK 2: INSTITUTIONAL**

Key objective: Successful implementation of road asset preservation practice through support of the district executives, an adequate organisational structure, adequate number of trained staff.

Element: AM policy and strategy

Issue:

- ☐ The existence of an AM policy and strategy that is supported by senior leadership;
- ☐ Need to recruit and retain capable staff by offering competitive salaries;
- ☐ An appropriate organisational structure with an adequate complement of appropriately trained staff with the necessary core competencies;
- ☐ The extent to which staff involved in the process understand and support it and are willing to contribute and improve it;
- ☐ KPIs that can be used to measure the quality of the service the agency provides;
- ☐ Means (funding) for outsourcing of all strategic, non-core activities (e.g. instrumented surveys such as roughness and deflection measurements).

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
2.1 (a)	Does the agency have an informal AM policy and associated strategy?	YES		1		1	
2.1 (b)	Does the agency have a formal AM policy?	YES		1		1	

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
2.1 (c)	Does the agency's AM policy align with its corporate vision and mission?	YES			2	1	3
2.1 (d)	Does the agency's AM policy take into account stakeholder needs and expectations?	NO					
2.2(a)	Have the basic levels of service been defined?	YES		1		1	
2.2 (b)	Are the differing requirements of stakeholders understood?	YES		1		1	
2.2 (c)	Are stakeholders/road users consulted when determining the levels of service?	NO			2		2
2.2 (d)	Is the level of service consultation strategy developed and implemented?	NO					
2.3 (a)	Is the contribution of the road network to the road agency's objectives defined?	YES		1		1	
2.3 (b)	Are the levels of service linked to measures of asset performance?	YES		1	3	1	4
2.3 (c)	Is the cost to fulfil the level of service requirements known?	YES		1		1	
2.3 (d)	Are the levels of service integral to decision making and business planning?	YES				1	
2.4 (a)	Are emergency responses understood by key members of staff?	YES		1		1	
2.4 (b)	Does the agency have a formal emergency response plan?	YES		1		1	
2.4 (c)	Is the safety of infrastructure routinely assessed?	YES		1	3	1	3
2.4 (d)	Are formal debriefs given to appropriate staff after severe damage to infrastructure as a result of a traffic accident (e.g. bridge strike) or climate induced event (e.g. washout)?	NO					
2.5 (a)	Does the agency's organisational structure identify roles, responsibilities and competencies of key staff, aligned with its AM policy, strategies, objectives and plans?	YES		1		1	
2.5 (b)	Are the roles, responsibilities and organisational commitment for AM documented and communicated to all relevant people?	NO			1		1
2.5 (c)	Does the agency have an adequate complement of appropriately qualified staff with designated responsibilities to undertake its AM mandate?	NO					
2.5 (d)	Is the agency able to outsource its non-core activities (e.g. instrumented surveys such as roughness and deflections)?	NO					
2.6 (a)	Does the agency offer training opportunities for staff?	YES		1		1	
2.6 (b)	Does AM specific training occur for primary staff?	NO					
2.6 (c)	Has the agency implemented an on-going training programme to address required AM competencies?	NO			1		1
2.6 (d)	Is there a formal AM capacity building programme which is routinely monitored?	NO					
2.7 (a)	Are agency engineer salaries less than 50% of comparable private sector positions?	YES		1		1	
2.7 (b)	Are agency engineer salaries 50-80% of comparable private sector positions?	NO			1		1
2.7 (c)	Are agency salaries roughly the same as comparable private sector positions?	NO					
2.7 (d)	Are RA salaries greater than comparable private sector positions?	NO					

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
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### BUILDING BLOCK 3: FINANCIAL

Key objective: The achieve stable, adequate and sustainable funding for maintenance.  
 Element: Financial arrangements  
 Issue:

- A stable, adequate and sustainable source(s) of funding for maintenance;
- Annual asset valuation of road infrastructure assets;
- Costing framework for determining unit costs of works;
- Budgeting and programming processes;
- Prioritised maintenance investment plan;
- Risk strategy to address potential consequences of inadequate funding (e.g. emergency response);
- Financial accounting and auditing of expenditure.

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
3.1 (a)	Does the agency depend only on the consolidated fund for road maintenance?	NO		1		1	
3.1 (b)	Is the funding received from the consolidated fund related to road asset condition and performance?	YES		1		1	
3.1 ©	Does the agency get a fixed share of its maintenance funding requirement from a Road Fund and/or central government?	YES		1	3	1	3
3.1 (d)	Does the agency get a variable share of its maintenance funding requirement from the Road Fund and/or central government that is related to road asset condition and performance?	NO					
3.2 (a)	Is the percentage of the budgeted funding for routine and periodic maintenance obtained < 30 % of that required?	YES		1		1	
3.2 (b)	Is the percentage of the budgeted funding obtained 30% - 59% of that required.	NO			1		1
3.2 ©	Is the percentage of the budgeted funding obtained 60% - 89% of that required?	NO					
3.2 (d)	Is the percentage of the budgeted funding obtained 90% - 100% of that required?	NO					
3.3 (a)	Does the agency carry out asset valuation?	YES		1		1	
3.3 (b)	If the agency carries our asset valuation, is the value of the agency's road asset decreasing?	YES		1		1	
3.3 ©	If the agency carries our asset valuation, is the value of the agency's road asset stable?	NO			2		2
3.3 (d)	If the agency carries our asset valuation, is the value of the agency's road asset increasing?	NO					
3.4 (a)	Is the percentage of the maintenance funding obtained ≥ 0.1% of the asset value of the road network?	YES		1		1	
3.4 (b)	Is the percentage of the maintenance funding obtained ≥ 0.5% of the asset value of the road network?	YES		1		1	
3.4 ©	Is the percentage of the maintenance funding obtained ≥ 1 % of the asset value of the road network?	YES		1	3	1	4

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
3.4 (d)	Is the percentage of the maintenance funding obtained $\geq$ 1.5 % of the asset value of the road network?	YES				1	
3.5 (a)	Does the agency carry out annual and multi-annual financial forecasting for maintenance and rehabilitation works?	YES		1	3	1	3
3.5 (b)	Are the financial forecasts for maintenance works and rehabilitation works based on current Asset Management Plan (AMP) outputs?	YES		1		1	
3.5 ©	Are the financial forecasts for maintenance works based on current comprehensive AMPs with reasoned supporting assumptions?	YES		1		1	
3.5 (d)	Are the financial forecasts for maintenance and rehabilitation works based on current comprehensive advanced AMPs with detailed supporting assumptions and high confidence in accuracy?	NO					
3.6 (a)	Does the agency operate an accounting system?	YES		1	3	1	4
3.6 (b)	Are the annual accounts finalised within the first quarter of the following year?	YES		1		1	
3.6 ©	Are the accounts audited annually?	YES		1		1	
3.6 (d)	Are the accounts published annually?	YES				1	

**BUILDING BLOCK 4: MANAGERIAL**

Key objective: Successful implementation of road asset preservation practice through support of the district executives, an adequate organisational structure, adequate number of trained staff

Element: Network management

Issue:

- Use of appropriate AM system that contains:
  - Network definition (road and bridge inventory information),
  - Network condition (roads and bridges)
  - Network usage (traffic)
  - Financial/cost information on works activities
  - Storage, update, analysis and reporting of data collected
- Appropriate levels of service and intervention standards that determine gaps in network performance?
- Prioritised annual, medium (3- 5yrs) and long term (> 5 yrs) maintenance and development plans and related investment plans?
- A risk management strategy (for unfunded works);
- Annual reporting on the overall management of the road asset (AM plan);
- Demand forecasting.

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
4.1 (a)	Does the roads agency have an AM system(s) in place which can store current and historical asset inventory, condition and asset utilization data (e.g. traffic)?	YES		1	3	1	4
4.1 (b)	Does the AM system enable treatment cost and historical maintenance information to be stored and accessed?	YES		1		1	

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
4.1 ©	Does the AM system allow for the comparison of the current condition of assets with intervention levels to determine maintenance requirements?	YES		1		1	
4.1 (d)	Can the AM system facilitate the prioritisation of road sections requiring maintenance?	YES				1	
4.2 (a)	Has the road agency developed intervention levels for all its principal asset types which require periodic maintenance (carriageway, shoulders, bridges, culverts)?	YES		1		1	
4.2 (b)	Are the intervention levels directly associated with defined levels of service?	YES		1	3	1	3
4.2 (c)	Have the intervention levels been determined using an economic analysis.	YES		1		1	
4.2 (d)	Have the intervention levels been determined using socio-economic-political (i.e. multi-criteria) analysis?	NO					
4.3 (a)	Does the agency produce annual maintenance and development plans?	YES		1		1	
4.3 (b)	Does the agency produce annual prioritised maintenance and development plans?	YES		1	3	1	4
4.3 (c)	Does the agency provide prioritised medium term (3-5 year) maintenance plans?	YES		1		1	
4.3 (d)	Does the agency provide prioritised long term (> 5 year) maintenance plans?	YES				1	
4.4 (a)	Does the agency keep records of maintenance and rehabilitation work activities?	YES		1		1	
4.4 (b)	Is maintenance and rehabilitation planned and prioritised according to asset condition?	YES		1		1	
4.4 (c)	Is maintenance and rehabilitation prioritised using a cost benefit approach?	YES		1	3	1	4
4.4 (d)	Is maintenance and rehabilitation expenditure prioritised using techniques which consider economic and social benefit?	YES				1	
4.5 (a)	Does the agency keep a record of maintenance works backlog?	YES		1		1	
4.5 (b)	Does the agency have a strategy to reduce maintenance backlog based on a percentage of the available development budget?	YES		1		1	
4.5 (c)	Does the agency prioritise the reduction of maintenance backlog using an economic analysis process?	NO			2		2
4.5 (d)	Does the agency prioritise the reduction of maintenance backlog using risk management techniques?	NO					
4.6 (a)	Does the agency carry out basic demand (traffic) forecasting?	YES		1		1	
4.6 (b)	Are the forecasts of traffic demand based on traffic counts carried out in the last 5 years using robust economic indicators (e.g. GDP)?	YES		1		1	
4.6 ©	Is traffic demand forecast based on mathematical analysis of historical trends?	NO			2		2
4.6 (d)	Are primary economic factors used when forecasting demand?	NO					
4.7 (a)	Does the agency schedule capital projects using staff judgement, taking into consideration government policy and political drivers?	YES		1		1	

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
4.7 (b)	Are projects identified using input from operational staff, estimates of service lives, traffic demand modelling and accident analysis?	NO			1		1
4.7 (c)	Are major capital projects for the next 10 years identified and prioritised taking into account socio-political-economic requirements?	NO					
4.7 (d)	Does the agency use advanced formalised socio-economic-political decision making techniques to identify major capital expenditure?	NO					

**BUILDING BLOCK 5: TECHNICAL**

Key objective: Identification and description of road assets including inventory, condition data and performance monitoring; and availability of data to network managers.

Element: Road network database

Issue:

- Existence of a road referencing system;
- Existence of a classified road inventory;
- Standard procedures for developing a road inventory, data collection and performance monitoring;
- Use of asset register to store all road asset information.

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
5.1 (a)	Does the agency have a road referencing system based on routes and nodes between centres of population?	YES		1	1	1	1
5.1 (b)	Is the road referencing system based on road sections (< 1 km) with homogeneous characteristics?	NO					
5.1 (c)	Is the road referencing system based on sub-sections (homogenous sections of 200 m lengths)?	NO					
5.1 (d)	Is the road referencing system GIS based?	NO					
5.2 (a)	Does the agency have an item inventory recording basic road surface types (earth, gravel or sealed)?	YES		1	2	1	2
5.2 (b)	Does the agency undertake an inventory of all principal assets (carriageway, shoulders, bridges, culverts, side drains)?	YES		1			
5.2 (c)	Does the inventory include the service lives of all principal assets?	NO					
5.2 (d)	Does the agency have deterioration models for all principal assets?	NO					
5.3 (a)	Is the road inventory based on assumptions or incomplete data?	YES		1	1	1	1
5.3 (b)	Is there a system of systematic and documented data collection for all principal assets (carriageway, shoulders, bridges, culverts, side drains) on a road by road basis?	YES		1			

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
5.3 (c)	Is there an established system of systematic and documented data collection for all principal assets (carriageway, shoulders, bridges, culverts, side drains) on a section basis?	NO		1	3		3
5.3 (d)	Is there an established system of systematic and documented data collection for all principal assets on a sub-section basis?	YES				1	
5.4 (a)	Does the agency carry out annual visual condition assessment surveys for carriageways, shoulders of gravel and earth roads?	YES		1	3	1	4
5.4 (b)	Are the visual condition assessments of gravel and earth carried out in accordance with well documented, standardised procedures?	YES		1		1	
5.4 (c)	Does the agency measure gravel loss?	YES				1	
5.4 (d)	Are the results of the gravel and earth road condition assessment recorded in a computerised AM system?	YES		1		1	
5.5 (a)	Does the agency estimate asset utilization (traffic) on its network?	YES		1	4	1	4
5.5 (b)	Does the agency measure asset utilization (traffic) annually on its major roads?	YES		1		1	
5.5 (c)	Does the agency project asset utilization across its network from annual measures of utilization of a sampled number of roads?	YES		1		1	
5.5 (d)	Does the agency assess bottlenecks on its network?	YES		1		1	

**BUILDING BLOCK 6: OPERATIONAL**

Key objective: Efficient operations at district level including planning and scheduling of maintenance, procurement of service providers and technical compliance.

Element: Procurement of services

Issue:

- Appropriate type of contract;
- Outsourcing of strategic, non-core activities;
- Maintenance scheduling of works;
- Auditing of maintenance works.

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
6.1 (a)	Are service delivery roles within the agency clearly allocated?	YES		1	3	1	3
6.1 (b)	Does the agency have provision for outsourcing of non-core activities?	YES		1		1	
6.1 (c)	Are competitive tendering practices used?	YES		1		1	
6.1 (d)	Are service delivery mechanisms reviewed annually to identify risks, benefits and costs of various outsourcing options?	NO					
6.2 (a)	Does the agency plan day to day maintenance activities?	YES		1		1	
6.2 (b)	Are the needs of stakeholders considered when scheduling day to day maintenance?	YES		1		1	

Economic Growth through Effective Road Asset Management

ITEM NO.	QUESTION	YES/NO	JUSTIFICATION/COMMENT	2016	Σ	2017	Σ
6.2 ©	Is the planning of day to day maintenance optimised in terms of the availability and use of resources?	YES		1	3	1	4
6.2 (d)	Is day to day planning of maintenance optimised by considering the availability of resources and impacts on road users?	YES				1	
6.3 (a)	Does the agency prepare day to day reports on road maintenance activities?	YES			0	1	2
6.3 (b)	Does the agency prepare weekly reports on road maintenance activities?	YES				1	
6.4 (a)	Does the agency undertake technical audits of designs?	YES		1	2	1	2
6.4 (b)	Does the agency regularly undertake technical audits of maintenance, construction and rehabilitation works?	YES		1		1	
6.4 (c)	Does the agency provide guidelines for undertaking the road audits?	NO					
6.4 (d)	Does the RA require service suppliers to be ISO 9000 certified?	NO					

## AFCAP GEM - ASSET MANAGEMENT ASSESSMENT MEASURABLE DATA

Building Block	Data Item	Unit	Benchmark	SIERRA LEONE			ZAMBIA			UGANDA - KAMULI			UGANDA - UNRA			WESTERN CAPE				
				2016	Jan 2017 (Baseline)	Oct-17	2016	Jan 2017 (Baseline)	Oct-17	2016	Jan 2017 (Baseline)	Oct-17	2016	May 2017 (Baseline)	Oct-17	2016	Jan 2017 (Baseline)	Oct-17		
External	Stakeholder communication tools available	No.	3	1	1	1	2	2	2	1	1	1	1	2	2	1	1	1		
	Meetings with stakeholders - pre budget	No.	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
	Council meetings - strategy	No.	4	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0		
	Council meetings - budget approval	No.	2	1	1	1	2	0	0	1	1	1	1	1	1	1	1	1		
	Meetings with stakeholders - post budget	No.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
<b>Building Block</b>	<b>Data Item</b>	<b>Unit</b>	<b>Benchmark</b>	<b>2016</b>	<b>Jan 2017 (Baseline)</b>	<b>Oct-17</b>	<b>2016</b>	<b>Jan 2017 (Baseline)</b>	<b>Oct-17</b>	<b>2016</b>	<b>Jan 2017 (Baseline)</b>	<b>Oct-17</b>	<b>2016</b>	<b>May 2017 (Baseline)</b>	<b>Oct-17</b>	<b>2016</b>	<b>Jan 2017 (Baseline)</b>	<b>Oct-17</b>		
Institutional	Total establishment - engineers + technicians	No.	5	3	3	3	4	4	4	3	3	3	40	40	40	3	1	1		
	Vacancies - engineers + technicians	No.	1	1	0	0	2	2	2	1	0	0	20	20	20	1	0	0		
	Planned training programmes	No.	2	0	0	0	0	0	0	0	0	0	5	5	5	0	0	0		
	Training courses undertaken	No.	2	0	0	0	2	0	0	0	0	0	2	2	2	0	0.85	0.85		
	DE salary as % of private sector	%	85%	65%	75%	75%	65%	75%	75%	65%	75%	75%	110%	120%	120%	85%	15.5	15.5		
<b>Building Block</b>	<b>Data Item</b>	<b>Unit</b>	<b>Benchmark</b>	<b>2016</b>	<b>Jan 2017 (Baseline)</b>	<b>Oct-17</b>	<b>2016</b>	<b>Jan 2017 (Baseline)</b>	<b>Oct-17</b>	<b>2016</b>	<b>Jan 2017 (Baseline)</b>	<b>Oct-17</b>	<b>2016</b>	<b>May 2017 (Baseline)</b>	<b>Oct-17</b>	<b>2016</b>	<b>Jan 2017 (Baseline)</b>	<b>Oct-17</b>		
Financial	Estimated project road network asset value	mUS\$	23.5	not known	not known	not known	not known	23.5	23.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	not known	not known		
	Total requirements - routine maintenance	mUS\$		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known		
	Total requirements - periodic maintenance	mUS\$		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known		
	Total requirements - rehabilitation/reconstruction	mUS\$		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	1	1	
	Total requirements - development	mUS\$		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	2	2	
	Budget - routine maintenance	mUS\$		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	1	0	1
	Budget - periodic maintenance	mUS\$		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	2	1.53846154	1.5384615
	Budget - rehabilitation/reconstruction	mUS\$		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	0	0.112	0.112
	Budget - development	mUS\$		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	1.538461538	4.65046154	5.6504615
	Funding - Road fund	mUS\$	0.500	0.100	0.112	0.112	0.100	0.112	0.112	0.100	0.112	0.112	40	50	50	0.112	nil	nil		
	Funding - Council funds	mUS\$	0.150	not known	not known	not known	0.095	0.120	0.120	not known	not known	not known	not known	not known	not known	not known	4.650461538	nil	nil	
	Funding - Donors	mUS\$		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	nil	not known	not known	
Funding - Others	mUS\$		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	nil	0.36923077	0.3692308		
<b>Building Block</b>	<b>Data Item</b>	<b>Unit</b>	<b>Benchmark</b>	<b>2016</b>	<b>Jan 2017 (Baseline)</b>	<b>Oct-17</b>	<b>2016</b>	<b>Jan 2017 (Baseline)</b>	<b>Oct-17</b>	<b>2016</b>	<b>Jan 2017 (Baseline)</b>	<b>Oct-17</b>	<b>2016</b>	<b>May 2017 (Baseline)</b>	<b>Oct-17</b>	<b>2016</b>	<b>Jan 2017 (Baseline)</b>	<b>Oct-17</b>		
Managerial	Cost of asset management system	US\$		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	1	1		
	Annual maintenance cost of AM system	US\$		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	0.369230769	not known	not known	
	Network under routine maintenance	Kms		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	3600	not known	not known	
	Network under routine maintenance as % of total	%		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	1	not known	not known	
	Network under periodic maintenance	Kms		not known	not known	not known	not known	not known	not known	not known	not known	2	2	not known	not known	not known	not known	not known	not known	
	Network under periodic maintenance as % of total	%		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	
	Network under rehabilitation	Kms		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	
	Network under rehabilitation as % of total	%		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	
	Network upgrading	Kms	10	not known	not known	not known	0	0	0	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	
	Network upgrading as % of total	%		not known	not known	not known	0	0	0	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	
	Network planned for periodic next 3 yrs	Kms		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	3600	3600	
	Network planned for rehabilitation next 3 yrs	Kms		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	303	303	
Network planned for upgrading next 3 yrs	Kms		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	303	303		
<b>Building Block</b>	<b>Data Item</b>	<b>Unit</b>	<b>Benchmark</b>	<b>2016</b>	<b>Jan 2017 (Baseline)</b>	<b>Oct-17</b>	<b>2016</b>	<b>Jan 2017 (Baseline)</b>	<b>Oct-17</b>	<b>2016</b>	<b>Jan 2017 (Baseline)</b>	<b>Oct-17</b>	<b>2016</b>	<b>May 2017 (Baseline)</b>	<b>Oct-17</b>	<b>2016</b>	<b>Jan 2017 (Baseline)</b>	<b>Oct-17</b>		
Technical	Total network length in district	Kms	860	600	600	600	650	650	650	600	600	600	1000	1000	1000	3600	not known	not known		
	Project network length	Kms	300	250	250	250	250	250	250	250	250	250	300	300	300	303	not known	not known		
	Network length - engineered/gravelled	Kms	100	50	50	50	50	50	50	50	50	50	50	50	50	303	not known	not known		
	Network length - non-engineered	Kms	100	50	50	50	200	200	200	50	50	50	50	50	50	0	not known	not known		
	No of culverts - pipes			not known	500	500	not known	500	500	not known	500	500	not known	500	500	not known	not known	not known		
	No of culverts - box			not known	25	25	not known	25	25	not known	25	25	not known	25	25	not known	1	1		
	No of low level drifts			not known	5	5	not known	5	5	not known	5	5	not known	5	5	not known	1	1		
	No of bridges		4	not known	2	2	not known	2	2	not known	2	2	not known	2	2	not known	1	1		
	No of structures inspected			not known	532	532	not known	532	532	not known	532	532	not known	532	532	not known	13	13		
	No of visual inspection cycles - road			not known	1	1	not known	1	1	not known	1	1	not known	1	1	1	43	43		
	No of vehicle counts			not known	nil	nil	not known	nil	nil	not known	nil	nil	not known	nil	nil	1	31	31		
	% Network - Very Good			not known	0	0	not known	0	0	not known	0	0	not known	0	0	1	12	12		
	% Network - Good			not known	10	10	not known	10	10	not known	10	10	not known	10	10	13	not known	not known		
	% Network - Fair			not known	25	25	not known	25	25	not known	25	25	not known	25	25	43	not known	not known		
	% Network - Poor			not known	25	25	not known	25	25	not known	25	25	not known	25	25	31	not known	not known		
	% Network - Very Poor			not known	40	40	not known	40	40	not known	40	40	not known	40	40	12	not known	not known		
	% Culverts - Very Good			not known	5	5	not known	5	5	not known	5	5	not known	5	5	not known	not known	not known		
% Culverts - Good			not known	50	50	not known	50	50	not known	50	50	not known	50	50	not known	not known	not known			

Economic Growth through Effective Road Asset Management

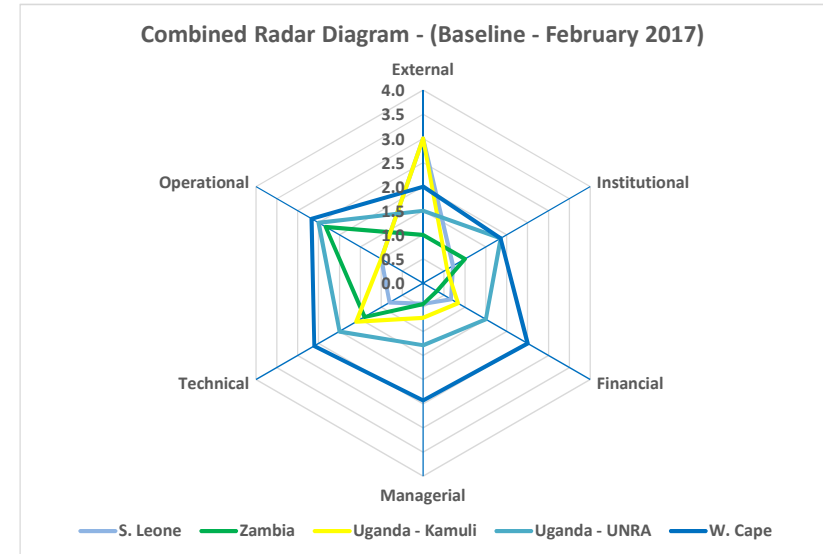
Building Block	Data Item	Unit	Benchmark	SIERRA LEONE			ZAMBIA			UGANDA - KAMULI			UGANDA - UNRA			WESTERN CAPE		
				2016	Jan 2017 (Baseline)	Oct-17	2016	Jan 2017 (Baseline)	Oct-17	2016	Jan 2017 (Baseline)	Oct-17	2016	May 2017 (Baseline)	Oct-17	2016	Jan 2017 (Baseline)	Oct-17
	% Culverts - Fair			not known	20	20	not known	20	20	not known	20	20	not known	20	20	not known	not known	not known
	% Culverts - Poor			not known	15	15	not known	15	15	not known	15	15	not known	15	15	not known	not known	not known
	% Culverts - Very Poor			not known	10	10	not known	10	10	not known	10	10	not known	10	10	not known	not known	not known
	% Bridges - Very Good			not known	5	5	not known	5	5	not known	5	5	not known	5	5	not known	not known	not known
	% Bridges - Good			not known	30	30	not known	30	30	not known	30	30	not known	30	30	not known	0	0
	% Bridges - Fair			not known	30	30	not known	30	30	not known	30	30	not known	30	30	not known	10	10
	% Bridges - Poor			not known	30	30	not known	30	30	not known	30	30	not known	30	30	not known	0	0
	% Bridges - Very Poor			not known	5	5	not known	5	5	not known	5	5	not known	5	5	not known	10	10
	No of impassable points - > 2 days closed			not known	10	10	not known	0	0	not known	10	10	not known	10	10	0	6	6
Building Block	Data Item	Unit	Benchmark	2016	Jan 2017 (Baseline)	Oct-17	2016	Jan 2017 (Baseline)	Oct-17	2016	Jan 2017 (Baseline)	Oct-17	2016	May 2017 (Baseline)	Oct-17	2016	Jan 2017 (Baseline)	Oct-17
Operational	No of graders		2	none	none	none	1	1	1	none	none	none	none	none	none	10	0	0
	No of tractors		5	none	none	none	2	2	2	none	none	none	none	none	none	0	not known	not known
	No of water bowsers			none	none	none	none	none	none	none	none	none	none	none	none	10	7	7
	No of tippers			none	none	none	none	none	none	none	none	none	none	none	none	6	7	7
	No of pedestrican rollers			none	none	none	none	none	none	none	none	none	none	none	none	6	32	32
	No of self propelled rollers			none	none	none	none	none	none	none	none	none	none	none	none	0	not known	not known
	Average annual utilisation rate - graders	%		not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known
	No of roads supervisors		1	1	1	1	1	1	1	1	1	1	1	1	1	7	not known	not known
	No of foremen		1	3	3	3	1	1	1	3	3	3	3	3	3	7	not known	not known
	No of skilled and semi-skilled workers		5	not known	not known	not known	2	2	2	not known	not known	not known	not known	not known	not known	32	0	0
	Total man-days of labor utilised			not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	0	0
	No of roadworks tenders			not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	0	0
	No of contracts awarded			not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	not known	0	0
	No of technical audits			nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	not known	0	0

**AFCAP GEM - ASSET MANAGEMENT ASSESSMENT SCORES - COMBINED (Baseline - February 2017)**

Building Block	#	Item Assessed	Score				
			S. Leone	Zambia	Uganda - Kamuli	Uganda - UNRA	W. Cape
External	1.1	National policy for rural roads	0	0	0	0	0
	1.2	Existence of rural road maintenance strategy	0	0	0	0	0
	1.3	Stakeholder consultation	3	0	3	2	2
	1.4	Tabling of budgets	0	0	0	0	0
	1.5	Reporting back to stakeholders	0	0	0	0	0
	1.6	Involvement in programmes at local level	3	2	3	1	2
Institutional	2.1	AM policy development	0	2	2	2	2
	2.2	Level of service - existence	0	0	0	1	2
	2.3	Level of service - use	1	0	0	1	3
	2.4	Emergency response plan	2	2	1	2	3
	2.5	Staff roles and responsibilities	1	1	0	1	1
	2.6	Staff training and capacity building	0	1	0	2	1
	2.7	Staff salaries	1	1	1	4	1
Financial	3.1	Provision of road maintenance funding	0	0	2	3	3
	3.2	Budget funding against perceived need	1	0	1	3	1
	3.3	Asset valuation	0	1	0	0	2
	3.4	Budget funding - asset value	1	0	0	0	3
	3.5	Financial forecasting	1	0	0	0	3
	3.6	Accounting system	1	1	2	3	3
Managerial	4.1	AM system	0	0	0	1	3
	4.2	Maintenance intervention levels	0	0	0	0	3
	4.3	Maintenance plans - existence	1	1	3	3	3
	4.4	Maintenance plans - methods used	1	1	1	2	3
	4.5	Maintenance backlog	0	0	0	1	2
	4.6	Traffic forecasting	0	0	0	0	2
	4.7	Capital expenditure - basis for	1	1	1	2	1
Technical	5.1	Road referencing system - existence	1	1	0	4	1
	5.2	Road inventory - existence	2	2	2	2	2
	5.3	Road inventory data	1	2	3	2	3
	5.4	Road condition assessment	0	2	2	1	3
	5.5	Asset utilisation	0	0	1	1	4
Operational	6.1	Service delivery mechanisms	3	3	3	3	3
	6.2	Maintenance planning	0	4	0	0	3
	6.3	Reporting	0	0	0	0	0
	6.4	Auditing	0	0	0	2	2

Assessment Scoring Criteria:
< 0 Not developed
0-1 Minimum
1-2 Core
2-3 Mature
3-4 Advanced

Building Block	Average Score per Building Block				
	S. Leone	Zambia	Uganda - Kamuli	Uganda - UNRA	W. Cape
External	3.00	1.00	3.00	1.50	2.00
Institutional	0.71	1.00	0.57	1.86	1.86
Financial	0.67	0.33	0.83	1.50	2.50
Managerial	0.43	0.43	0.71	1.29	2.43
Technical	0.80	1.40	1.60	2.00	2.60
Operational	1.00	2.33	1.00	2.50	2.67



**AFCAP GEM - ASSET MANAGEMENT ASSESSMENT SCORES BASELINE - (October 2017)**

Building Block	#	Item Assessed	Score				
			S. Leone	Zambia	Uganda - Kamuli	Uganda - UNRA	W. Cape
External	1.1	National policy for rural roads	4	3	3	4	2
	1.2	Existence of rural road maintenance strategy	2	0	2	2	0
	1.3	Stakeholder consultation	3	3	3	3	1
	1.4	Tabling of budgets	2	4	4	2	3
	1.5	Reporting back to stakeholders	0	1	2	1	2
	1.6	Involvement in programmes at local level	3	2	3	2	2
Institutional	2.1	AM policy development	0	2	2	3	3
	2.2	Level of service - existence	0	0	1	3	2
	2.3	Level of service - use	1	1	1	3	4
	2.4	Emergency response plan	2	2	1	1	3
	2.5	Staff roles and responsibilities	0	3	0	2	1
	2.6	Staff training and capacity building	1	1	0	1	1
	2.7	Staff salaries	1	1	1	3	1
Financial	3.1	Provision of road maintenance funding	2	1	2	1	3
	3.2	Budget funding against perceived need	1	1	1	2	1
	3.3	Asset valuation	0	1	1	2	2
	3.4	Budget funding - asset value	0	0	0	2	4
	3.5	Financial forecasting	1	0	0	3	3
	3.6	Accounting system	3	2	3	3	4
Managerial	4.1	AM system	1	0	0	1	4
	4.2	Maintenance intervention levels	0	0	0	2	3
	4.3	Maintenance plans - existence	1	1	3	3	4
	4.4	Maintenance plans - methods used	1	2	1	3	4
	4.5	Maintenance backlog	0	0	0	3	2
	4.6	Traffic forecasting	0	0	0	2	2
	4.7	Capital expenditure - basis for	1	1	1	3	1
Technical	5.1	Road referencing system - existence	1	2	2	3	1
	5.2	Road inventory - existence	2	2	2	2	2
	5.3	Road inventory data	0	3	3	2	3
	5.4	Road condition assessment	2	2	2	3	4
	5.5	Asset utilisation	0	1	1	4	4
Operational	6.1	Service delivery mechanisms	3	3	3	3	3
	6.2	Maintenance planning	0	4	0	3	4
	6.3	Reporting	0	1	1	2	2
	6.4	Auditing	0	1	0	2	2

Assessment Scoring Criteria:
< 0 Not developed
0-1 Minimum
1-2 Core
2-3 Mature
3-4 Advanced

Building Block	Average Score per Building Block				
	S. Leone	Zambia	Uganda - Kamuli	Uganda - UNRA	W. Cape
External	2.33	2.17	2.83	2.33	1.67
Institutional	0.71	1.43	0.86	2.29	2.14
Financial	1.17	0.83	1.17	2.17	3.00
Managerial	0.57	0.57	0.71	2.43	2.43
Technical	1.00	2.00	2.00	2.80	3.20
Operational	0.75	2.25	1.00	2.50	2.67

