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Economic Growth through Effective Road Asset Management

Inception Report for Implementation Phase

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Project No. 10636A GEN2018A

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CIVIL DESIGN SOLUTIONS

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Cover Image: Scenes from the country visits

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ReCAP Completion Report Template

ReCAP Database Details: Economic Growth through Effective Road Asset Management			
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Abstract

The Africa Community Access Partnership (AFCAP) is providing technical assistance to achieve improvements in asset management performance on selected rural roads networks. The performance will be measured annually against a new framework for rural road asset management that is being developed as part of the study. Measurements will be taken of the road network condition and the impact of the road condition on the rural economy. These data will be discussed at annual stakeholder meetings in the project areas and regionally. They will be used as part of an influencing strategy to achieve home-grown and sustainable improvements to the management of rural roads. The countries that are participating in the project are Zambia, Uganda, Sierra Leone and the Western Cape Province of South Africa.

The Implementation Phase of the project commenced at the start of July 2016. Activities that have been carried out include:

- Project launch meeting in Pretoria on 6th and 7th July.
- Initial Visit to the Project Areas by the Team Leader and Maintenance Expert from 17th and 28th July 2016.
- Confirmation of project areas.
- Finalisation of data collection instruments.
- Preparation of a Project Information Leaflet.

Zambia, Uganda and Sierra Leone are now collecting road inventory and condition data in the project areas as well as social and economic data. They are completing the self-assessment questionnaires on their current road asset management performance. The Western Cape has completed the self-assessment questionnaire.

Preparations are underway for further visits of the project team to the participating countries, for the ARMFA General Assembly meeting and the first PIT meeting in November 2016.

Key Words

Rural Roads, Maintenance, Asset Management, Capacity Development

Acronyms, Units and Currencies

$	United States Dollars
AFCAP	Africa Community Access Partnership
AM	Asset Management
ARMFA	African Road Maintenance Fund Association
ASCAP	Asia Community Access Partnership
BADEA	Arab Bank for Economic Development in Africa.
CDS	Civil Design Solutions
DFID	Department for Further International Development
DM	District Municipality
EU	European Union
GDP	Gross Domestic Product
GPS	Global positioning system
IAMM	Infrastructure Asset Management Manual
ILO	International Labour Organization
IQL	Information Quality Level
KLG	Kamuli Local Government
LVR	Low Volume Road
MLG	Ministry of Local Government
MOWT	Ministry of Works and Transport
NRFA	National Road Fund Administration
PMU	Project Management Unit
PO-RALG	President's Office – Regional and Local Government
RAI	Rural Access Index
RDA	Road Development Authority (Zambia)
ReCAP	Research for Community Access Partnership
RMFA	Road Maintenance Fund Administration
SC	Steering Committee
SDG	Strategic Development Goal
SLRA	Sierra Leone Roads Authority
UK	United Kingdom (of Great Britain and Northern Ireland)
UKAid	United Kingdom Aid (Department for International Development, UK)
UoB	University of Birmingham
UNRA	Uganda National Road Authority
URF	Uganda Road Fund

Contents

1 Introduction

1.1 Background to the Project

Cardno Emerging Markets is managing a programme of Research for Community Access (ReCAP) on behalf of the Department for International Development (DFID). The programme includes research and capacity building activities in Africa (Africa Community Access Programme – AFCAP) and Asia (Asia Community Access Programme – ASCAP).

The project is known as 'Economic Growth through Effective Road Asset Management – GEM" and will initially be implemented in sub-Sahara Africa as part of AFCAP. Sierra Leone, Uganda, Zambia and the Western Cape are participating in the project, but the research process and outcomes will be shared with other AFCAP-participating countries through regional meetings of the Project Implementation Team (PIT). If the project is successful it is expected that the research process will be rolled out on a wider basis on Africa and SE Asia. The African Road Maintenance Fund Association (ARMFA) will provide an oversight role and a possible longer term institutional home. The Implementation Phase of the project commenced in July 2016 and will run for 29 months.

Full details of the design of the project can be found in the "Final Formulation Phase Report" dated 9th May 2016.

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-Sahara Africa.

1.3 Objectives of the Project

The objectives of the project are as follows:

1. 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.
2. Develop a framework for measuring performance in road asset management appropriate to rural road networks and apply it in selected project areas.
3. Develop simple and appropriate tools for monitoring road condition and apply them in the project areas.
4. Develop simple indicators of economic and social impact of rural roads and monitor them in the project areas.
5. 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 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 destinies. 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 will be provided through demand-led technical assistance funded by UK Aid through AFCAP.

1.5 Formulation and Implementation Phases

The Implementation Phase follows the 5-month Formulation Phase, which culminated in the submission of the "Final Formulation Phase Report" (dated 9th May 2016). The key activities carried out in the Formulation Phase included:

- Agreement on the Project Purpose, Objectives and Approach
- Review of existing rural roads asset management in Africa
- Development of a draft framework for self-assessment of asset management performance
- Development of draft tools for road network asset valuation and condition monitoring
- Development of draft indicators of social and economic impacts of rural roads
- Development of a framework for capacity development in the participating roads agencies
- Selection of the participating countries
- Work plan for the Implementation Phase
- Expected project contribution to ReCAP monitoring indictors.

1.6 Purpose of this Report

This report covers the activities carried out in the first month of the project implementation. It incorporates elements from two previous reports:

- Launch Meeting Report dated 22nd July 2016
- Report on Initial Visits to Project Areas dated 3rd August 2016.

The report also sets out the planned activities for the next phase of the project implementation.

Annexes E, F and G include a summary of the status of the roads sector in Zambia, Uganda and Sierra Leone. The information is based on notes taken during a series of meetings held in each country, and is not meant as a detailed analysis of the roads sector in each country.

2 Project Launch Meeting

The Launch Meeting marked the start of the Implementation Phase of the project. The meeting was held at the City Lodge Hotel in Hatfield, Pretoria, on 6th and 7th July 2016. It was attended by representatives of the participating regions, the ReCAP Infrastructure Research Manager and the Project Research Team. The purpose of the meeting was to:

- Discuss the data collection requirements for the project areas.
- Discuss the self-assessment questionnaire.
- Help the participating countries to select the project areas.
- Discuss research options for the University of Birmingham PhD students.
- Agree a programme for implementation including timing of first visits of the Technical Assistance team.

At the meeting it was agreed that the Project Research Areas were:

- Zambia: Chongwe District
- Sierra Leone: Tonkilili District
- Uganda: Kamuli District

In addition to this, the Overberg Region of the Western Cape Province in South Africa has been included as a control/demonstration area.

The next steps in the project implementation process were agreed as follows:

1. Refinement of the data collection requirements for the road condition monitoring, social and economic monitoring indicators and the self-assessment questionnaire.
2. Refinement of PhD topics to ensure there is clear differentiation between the three theses and that they are relevant to the GEM project and to incorporate more engineering technical content.
3. A visit by the Team Leader and Maintenance Expert to Zambia, Uganda and Sierra Leone starting 18th July 2016.
4. A visit in August/September 2016 to the three countries by the Road Condition Monitoring Expert.
5. Report on the project to the ARMFA General Assembly meeting to be held later in 2016.
6. First Project Implementation Team (PIT) meeting expected to be held in the Western Cape in November 2016.

A summary of the discussions in included in Annex A.

3 Data Collection Instruments

3.1 Self- Assessment Questionnaire

The self-assessment questionnaire has been refined since the end of the Formulation Phase. Feedback was obtained from the Western Cape and from the Ghanaian students at the University of Birmingham.

There are now three versions of the questionnaire:

1. The "National Level" questionnaire which will be used by the RDA, UNRA and the Western Cape government.
2. The "District Level" questionnaire which will be used by Chongwe and Kamuli Districts (Zambia and Uganda).
3. The "Sierra Leone" questionnaire which will be used by the SLRA.

The questionnaires are included in Annex I.

The "District Level" questionnaire is a simplified version of the "National Level" questionnaire.

The "Sierra Leone" questionnaire is based on the "National Level" questionnaire, but modified to focus on feeder roads under the responsibility of SLRA. It is not expected that the "District Level" questionnaire will be used at the current stage of the project implementation in Sierra Leone due to low capacity in the district council.

It was realised that the questionnaire does not have to be identical for each participating roads agency. The primary function of the questionnaire is to track changes in the performance of the agencies over time, rather than to allow direct comparisons between agencies. The critical factor is that each question is understood by the agency staff and is appropriate to their institutional set-up and operations.

3.2 Road Inventory and Condition Forms

The following forms have been prepared and distributed to the participating countries:

- ✓ Inventory form- roads
- ✓ Inventory form- bridges
- ✓ Inventory form- culverts
- ✓ Condition survey form- roads
- ✓ Condition survey form- bridges
- ✓ Condition survey form- culverts

The forms are included in Annex J.

Fields have been included on the forms to collect data on climate vulnerability of roads, including erosion of the carriageway and side drains and overtopping of bridges and culverts.

This followed consultation with the managers of the ReCAP regional project on climate adaption for vulnerable road access.

3.3 Social and Economic Data

The social and economic study will focus on market centres and villages which are reliant on a district road for access to the main road network and thereby the district centre. The suggested indicators have been chosen to measure changes in the road condition on the community and the local economy. They included availability of public transport, fares, prices of basic commodities in the local market, school attendance, etc. It has been recommended that 10 centres should be selected for the study in each Project Area, but the participating countries are free to customise the study to their own environment and capacity. This includes modifying the indicators or adding and removing indictors. A draft questionnaire indicating the basic requirements for social and economic data collection has been distributed to the countries and is included in Annex H.

4 Project Information Leaflet

An A5 folded leaflet has been prepared with basic information on the project. It was found to be highly useful on the Initial Visit to explain the project objectives, approach and methodology to stakeholders.

It is expected that the leaflet will be placed on the ReCAP web site and on a dedicated project page on the ReCAP web site for information sharing.

Figure 4.1: Project Information Leaflet

5 Initial Visit to the Project Areas

5.1 Purpose

The Initial Visit to the Project Areas was carried out by the Team Leader and Maintenance Expert between 17th and 28th July 2016. They visited Zambia, Uganda and Sierra Leone. The itinerary for the visit is included in Annex C.

The purpose of the visits was to:

- Meet key stakeholders at national and local levels and discuss the project objectives and research methodology.
- Confirm the selected project areas and project road network in each country
- Discuss the data collection requirements for the project areas including the self-assessment questionnaire and refine the data collection tools.
- Prepare an action plan for each country with clear deliverables, target dates and responsibilities.

This chapter includes a summary of the main findings and agreements for each country.

It is noted that the project team has not yet visited the Overberg Region of the Western Cape during the Implementation Phase. However, the Western Province roads agency is collecting relevant data on road condition and socio/economic indicators, and will complete the self-assessment questionnaire. A site visit is scheduled in the Western Cape during the PIT meeting.

5.2 Zambia

The team was in Zambia from 17th to 20th July. Meetings were held with the RDA, NRFA and Chongwe district council. A sample of roads was inspected in the project area. The district centre of Chongwe is on the T4 Great East Road about 45km from Lusaka City.

Figure 5.1: Map of Chongwe District

The current status of institutional arrangements for roads in Zambia, in particular concerning the district road network in Chongwe, are summarised in Annex E.

The RDA is the responsible agency in Zambia for the implementation of the project. Furthermore, the council representatives present at two meetings held in Chongwe District expressed enthusiasm for their participation in the project. The District Commissioner was very supportive. The RDA Project Officer will coordinate the project inputs by the District.

The responsibility for data collection and reporting for the project will be shared between the RDA and the District, since these two organisations share responsibility for managing the district road network.

- The two versions of the self-assessment questionnaire (national authority and district) will be completed separately by the two agencies.
- The RDA will be responsible for the condition assessment on the project network as the District does not have capacity to carry out this task. The RDA holds the national database of all roads.
- The District will be responsible for collecting social and economic data. Much of the required data are already available. The Road Supervisor has capacity to collect specific data on the roads and in market centres as required.

Action Plan for Zambia

The following action plan has been developed to guide Zambia in the initial phase of data collection. It was requested that the first draft of all data be compiled before the end of August 2016.

	Action	Responsibility
1	Confirm the name of the Zambia GEM Project Officer.	RDA
2	Provide a copy of the RDA delegated responsibility to the District Councils.	RDA
3	Prepare road and culvert inventories for the project network.	RDA Regional Office in liaison with District Engineer
4	Prepare a map of the project network. If possible, overlay the road map on the digitised 1: 50,000 topographic map of the district. Print an A0 size map to be mounted in the District Engineer's Office.	RDA Regional Office in liaison with District Engineer
5	Complete the RDA self-assessment questionnaire.	RDA Regional Office
6	Complete the District self-assessment questionnaire	District Engineer
7	Complete the condition assessment forms for the project network based on existing data.	RDA Regional Office
8	Identify 10 market centres for the social and economic study and plot their locations on the project map.	District Council

	Action	Responsibility
9	Complete the social and economic data collection form.	District Council

5.3 Uganda

The team was in Uganda from 20th to 23rd July 2016. Meetings were held with UNRA officials from the Departments of Road Maintenance, Network Planning, and Research and Development, the Uganda AFCAP Steering Committee and UNRA Station Manager in Jinja.

A meeting was held in Kamuli with the Kamuli District Engineer, the Assistant Engineering Officer (Kamuli District), a representative of the Buyende District Engineer, and UNRA staff including the Station Manager of Jinja Station. Unfortunately, it was not possible to meet other district council department heads or the Chief Administration Officer (CAO). A sample of UNRA and district roads was inspected.

The Uganda AFCAP Steering Committee proposed a project area composed of a group of 5 districts including Kamuli, Buyende, Kaliro, Luuka and Namutumba. These districts have been established progressively over the years from the original Kamuli District. However, this proposed project area was reduced to a single district, Kamuli, which is more manageable for the project. The district centre of Kamuli is reached by a newly constructed paved road from Jinja. It is a well-established town. The district has a land area of about 1,600 km^2 and a population of about 500,000. It is densely populated.

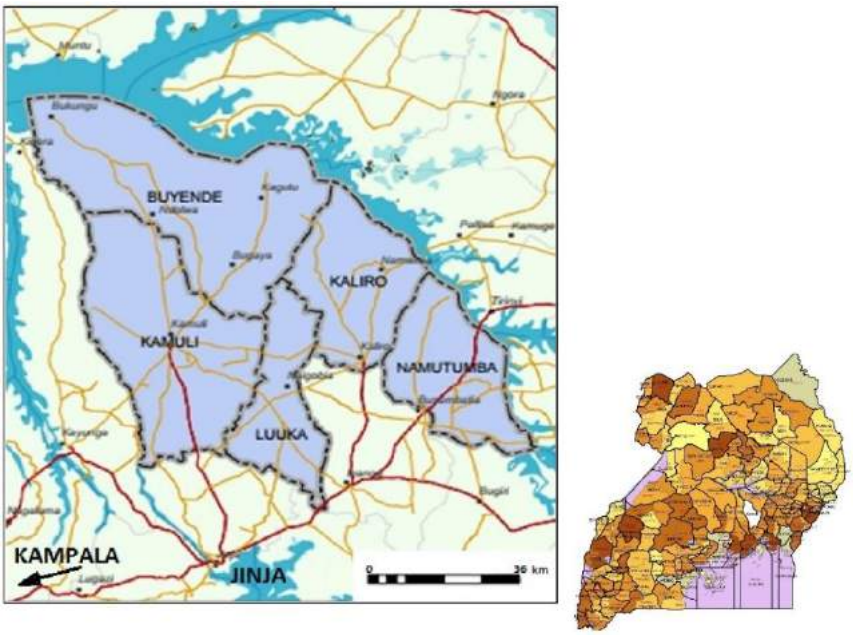

Figure 5.2: Map of Kamuli and Surrounding Districts

The current status of the institutional arrangements for roads in Uganda, in particular concerning the district road network in Kamuli, are summarised in Annex F.

UNRA is the responsible agency in Uganda for the implementation of the project. The point of contact for the Project Research Team is the AFCAP National Coordinator and it is expected that the day-to-day running of the project will be the responsibility of a Research Fellow in UNRA and a researcher from Makerere University.

The District Engineer in Kamuli expressed clear appreciation for project objectives and agreed to participate. However, due to limited capacity in the District Council, it is expected that the project will be reliant on UNRA, at least for the first year of the project implementation. The project PhD candidate can assist to coordinate district inputs as he is not bound by legal mandates defining the separate roles of UNRA and local government.

The responsibility for the road network in the district is shared between UNRA and the District Local Government. It will therefore be necessary to share the responsibility for data collection and reporting.

- The two versions of the self-assessment questionnaire (UNRA and district) will be completed separately by the two institutions.
- UNRA will be responsible for the condition assessment on the UNRA network and Kamuli District Local Government will be responsible for the assessment of the condition of the district network.
- Both UNRA and Kamuli District Local Government will be responsible for collecting the social and economic data. It is expected that some of the required data are already available.

The District Engineer indicated that he had no budget in the current financial year to support the collection of data in the communities. However, the district did subsequently agree to inventory their roads and carry out the condition survey by end of September 2016.

Action Plan for Uganda

The following action plan has been developed to guide Uganda in the initial phase of data collection. It was requested that the first draft of all data be compiled before the end of August 2016.

Action		Responsibility
1	Prepare road and culvert inventories for the UNRA road network in Kamuli District.	UNRA
2	Prepare road and culvert inventories for the Kamuli District road network.	Kamuli District Engineer
3	Prepare a map of the combined project network. If possible, overlay the road map on the digitised 1:50,000 topographic map of the district. Print an A0 size map to be mounted in the District Engineer's Office.	UNRA in liaison with Makerere University and MOWT.
4	Complete the UNRA self-assessment questionnaire.	UNRA

Action		Responsibility
5	Complete the Kamuli District self-assessment questionnaire.	Kamuli District Engineer
6	Complete the condition assessment forms for the project network (roads and culverts) based on existing data.	UNRA Jinja Station Manager, and Kamuli District Engineer in liaison with MOWT.
7	Identify up to 10 market centres for the social and economic study and plot their locations on the project map.	Makerere University in liaison with UNRA, Kamuli District Engineer
8	Complete the social and economic data collection form.	UNRA, Kamuli District Engineer

5.4 Sierra Leone

The team was in Sierra Leone from 24th to 28th July. Meetings were held with the Minister of Works Housing and Infrastructure, the Director General and senior management of the SLRA, the CEO of the Road Maintenance Fund Administration (RMFA), the Regional Engineer responsible for Tonkolili District, the Chairman of Tonkolili District Council, councillors and council officials. A sample of feeder roads was inspected in Tonkolili District.

The Project Area is Tonkilili District. SLRA initially proposed to include 2 districts (Tonkilili and Kono) but this would not have been logistically possible and Tonkilili is closer to Freetown. The district centre is at Magburaka, which is close to the large town of Makeni. Both are connected to Freetown and the airport by paved roads in good condition (2.5-hour drive from Freetown). The Tonkolili district has a land area of about 7,003 km^2 and a population of about 530,000. It is relatively densely populated. Average annual rainfall in Sierra Leone is over 3,000mm, with up to 4,000mm received in areas along the coast.

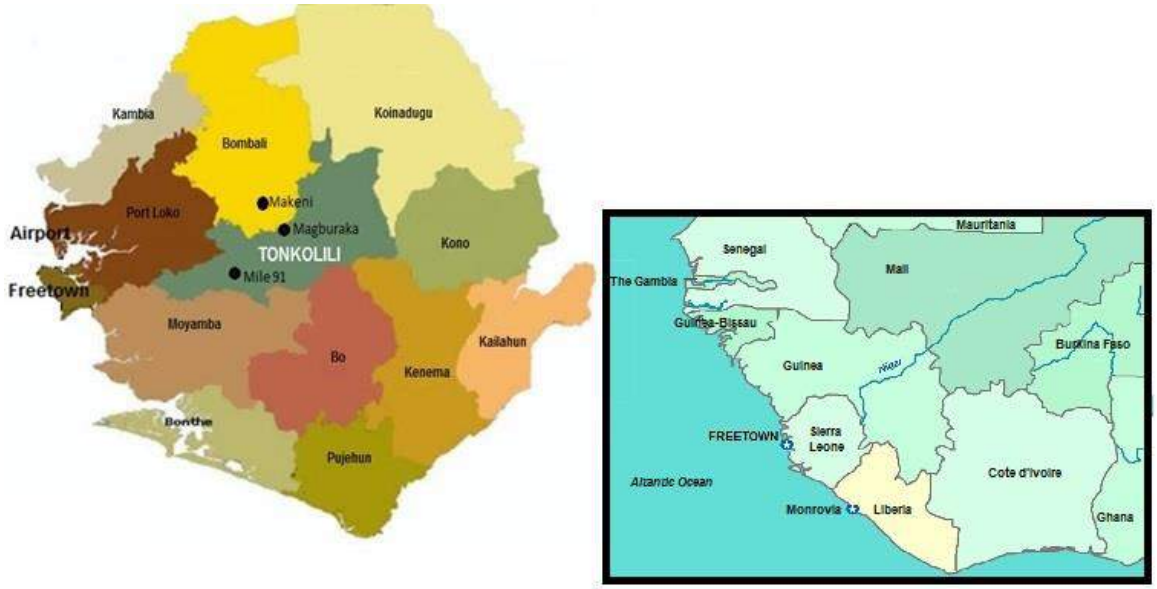

Figure 5.3: Map of Sierra Leone showing the Districts

The current status of the institutional arrangements for roads in Sierra Leone are summarised in Annex G.

SLRA is the responsible agency in Sierra Leone for the implementation of the project. The point of contact for the research team is the AFCAP National Coordinator, who will also be responsible for the day-to-day running of the project and will provide oversight and coordination.

The Council Chairman in Tonkolili expressed appreciation for project objectives and agreed to support the project. However, the project will be reliant on SLRA to coordinate the inputs by the district, and to provide resources. The Council Engineer is currently not present in the district. However, SLRA has an engineer and three road superintendents permanently based in the district and there is a vehicle and a motorbike available for project work. Funds are available from the RMFA to support research but these need to be accessed by the SLRA.

Figure 5.4: SLRA Vehicle Based in the Region and Available to the Project

Since the responsibility for the feeder road network is shared between SLRA and the District, it will be necessary to share the responsibility for data collection and reporting. However only one self-assessment questionnaire will be completed: this is the version designed for national roads authorities and customised by SLRA.

The SLRA will be responsible for identifying a network of feeder roads to be included in the project. It has been recommended that a priority network of about 250km should be identified rather than including the entire network of feeder roads in the district (estimated at over 600km). The following criteria have been suggested for use in this prioritisation:

- Roads that are on the old “Shell” map of Sierra Leone or government topographic maps (1:50,000 or 1: 250,000)
- Roads carrying the highest traffic
- Roads linking the most important and largest population centres
- Roads in good alignments (watersheds) and avoiding areas of weak soils.

An inventory of the roads is being prepared by SLRA and they will be located on a map. A condition assessment will be carried out on the identified project network, but this expected to take several months. It will be carried out by SLRA and district staff.

The SLRA will be responsible for collecting the social and economic data but will need to involve district staff in this exercise. It is expected that some of the required data are already available in the district.

Action Plan for Sierra Leone

The following action plan has been developed to guide Sierra Leone in the initial phase of data collection. It was requested that the first draft of all data be compiled before the end of August 2016.

Action		Responsibility
1	Identify the project road network and prepare road and culvert inventories.	SLRA in liaison with the district
2	Prepare a map of the project network. If possible, overlay the road map on the digitised 1: 50,000 topographic map of the district. Print an A0 size map to be mounted in the District Engineer's Office.	SLRA
3	Complete the self-assessment questionnaire.	SLRA
4	Identify up to 10 market centres for the social and economic study and plot their locations on the project map.	SLRA in liaison with the Council
5	Complete the social and economic data collection form.	SLRA working with the Council
6	Complete the condition assessment forms for the project network (roads and culverts) based on existing data. ***NB- this task may take longer; suggested target date 31 December 2016.***	SLRA and District Engineer

6 Project Management

6.1 Oversight and Supervision

The overall management of the project is being provided by the ReCAP PMU with input both from the AFCAP Steering Committee and the ReCAP Technical Panel. The ReCAP Infrastructure Research Manager is responsible for supervision of the technical assistance contract and the project outputs within the ReCAP Quality Assurance Framework. The project is engaging with ARMFA as a possible long term institutional home for the project. This would include overseeing its roll out to additional countries.

6.2 Technical Assistance

Technical assistance and management support to all aspects of the project implementation is being provided by a team of experts as follows:

Team Leader	Rob Geddes	Core team
Road Maintenance Expert	Kingstone Gongera	
Road Condition Monitoring Expert	Charles Bopoto	
Rural Transport Economist	Camilla Lema	
Institutional and Financing Expert	Mike Pinard	
Asset Management Expert	Michael Burrow	
Field Researchers (UoB PhD Students)	Being confirmed	
Other Technical Experts	Gerrie van Zyl	
	Gurmel Ghataora.	

The roles and responsibilities of the team members are described in the Formulation Phase Report.

6.3 Project Implementation Team

The Project Implementation Team (PIT) will comprise at least two representatives from each of the participating roads agencies and representatives of the technical assistance (observer status). It may be necessary for several representatives from some countries to attend the meeting. For example, Uganda representatives could include UNRA Department of Research and Development, UNRA Jinja Station, Kamuli District and Makerere University.

ReCAP management is considering combining the PIT meeting for GEM with meetings for other regional AFCAP projects. It is expected that representatives of all 12 AFCAP participating countries will attend the meetings. This will provide all countries with an opportunity to learn from the project experiences and implement the approaches within their own programmes. The PIT will meet annually for the duration of the implementation phase.

Further details of the PIT arrangements, roles and responsibilities are given in the Formulation Phase Report.

7 Work Plan for the Implementation Phase

7.1 Initial Phase (4 months)

The initial phase of the project implementation includes the following activities: by the participating countries and the technical assistance team.

- Identify a target road network in each participating area.
- Conduct baseline studies in each participating area including:
    - Self-assessment by each participating road agency of their performance in road asset management against the new performance framework for rural roads asset management; review by the project team of the self-assessments.
    - Collect road inventory and condition data on the target road network
    - Collect social and economic data linked to road condition.
- Prepare a Capacity Development Plan (CDP) for each participating road agency.
- Discuss the baseline data and CDPs with sector stakeholders initially in each area and at a regional meeting of the PIT. Prepare a progress report of the PIT to AFCAP management.
- Participate in the next Annual General Assembly of ARMFA.

The initial phase will extend to November 2016 due to the postponement of the ARMFA Annual General Assembly (now expected to be held in Cote d'Ivoire in November).

7.2 Growth Phase (24 months)

The growth phase of the project will overlap with the Initial Phase and will include the following activities by the technical assistance team:

- Visit each participating region three times per annum (on average) to provide technical back-up support, mentoring and training inputs, advise on refinements to the CDP, etc.
- Repeat the self-assessments of asset management performance and the monitoring data collection in each project area (including the demonstration area) one and two years after the initial baseline survey.
- Arrange annual meetings of the PIT
- Report on progress to the AFCAP PMU, ARMFA and other relevant regional and international forums.

7.3 Conclusion and Dissemination (2 months)

The conclusion and dissemination phase of the project will include the following activities by the technical assistance team:

- Conduct a workshop with sector stakeholders to disseminate the results of the project and prepare a Dissemination Workshop Report; it is likely that this workshop will be held in conjunction with the final meeting of the PIT

- Prepare appropriate guidelines for rural road asset management including the Performance Monitoring Framework, road condition monitoring tools and indicators for social and economic impacts of rural roads
- Produce a paper (or papers) suitable for peer review that may be presented at regional or international conferences and/or published in recognised technical journals.

7.4 Deliverables

The following are the project deliverables.

- An Inception Report for the implementation and dissemination phases - 1 month after receiving the go-ahead for the implementation. (*This report*).
- A Baseline Study Report - 5 months after receiving the go-ahead for the implementation.
- Quarterly Progress Reports - starting 3 months after the Baseline Study Report.
- A Final Study Report - 36 months after contract signing.
- Guidelines for monitoring of performance in rural road asset management - included in the Final Study Report.
- Dissemination Workshop Report - included in the Final Study Report.

7.5 Workplan and Inputs

The indicative workplan and time inputs by each member of the technical assistance team are shown in Figure 7.1. This is an updated version of the workplan submitted with the Formulation Phase Report. It reflects a one-month delay in launching the project and a reduction in the inputs of the Maintenance Expert and Condition Monitoring Expert as requested by ReCAP management.

Activity	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18
Project launch meeting and Initial Visit	■																												
Baseline data collection and analysis		■	■											■	■											■	■		
Self assessments of performance		■	■												■												■		
PIT Meetings				■												■												■	
Techncial assistance inputs		■	■						■				■				■				■				■				
Dissemination workshop																												■	
Inception/Baseline/Quarterly Reports		■			■				■				■				■				■				■				
Final Report																													■
Phase	**Initial**				**Growth**																							**Diss.**	

Expert	Estimated time inputs (days)																													Total days
Team Leader	16	6	2	6	2	1	1	1	12	1	1	1	2	2	2	6	2	1	1	1	12	1	1	1	3	2	2	10	6	105
Road Maintenance Expert	16	2	17	5	2				17				17	2	2	5	17				17				18	2	2	7	2	150
Road Condition Monitoring Expert	6	12	8	5	1				2				1	10	2	5	1				4				2	10	2	7	2	80
Rural Transport Economist	6	2	16	5	1				2				1	10	2	5	1				4				2	10	2	7	2	78
Institutional and Financing Expert	4		2	5					2				1			5	1				2				2	2		7	2	35
Asset Management Expert	6		1	6					2				1			6	1				1				1	1		7	2	35
Field researchers	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	1320
Other Technical Experts				6					12				6			4	6				12				6			4	2	58
																												Days		**1861**
																												Months		**84.6**

Inputs provided in participating project areas.

Launch meeting and Initial Visit to countries.

Figure 7.1: Programme for Implementation Phase

8 Next Steps

The next steps in the project implementation, are as follows:

1. The Road Condition Monitoring Expert will visit the three countries in August/September in order to:
    - Observe the systems and procedures held by the RA's responsible for the project network, determine maturity level.
    - Study the utilisation of the systems and procedures in decision making at all levels.
    - Review the inventories as prepared or as already held for the project roads.
    - Introduce the relevant staff to GPS condition surveys, etc.
    - Carry out pilot runs of the condition monitoring system on a few selected roads.
    - Analyse the data so collected together with the relevant staff.
    - Agree on future condition survey plans/timing.
2. The Maintenance Expert and Rural Transport Economist will visit the three countries in September 2016 to follow up on the data collection and start developing a capacity building plan for each of the participating roads agencies.
3. The first PIT meeting is scheduled for 15th and 16th November 2016 in the Western Cape.
4. The ARMFA Annual Assembly previously scheduled for Ghana in September 2016 will now be held in Cote d'Ivoire from 7th to 12th November.
5. The project team will continue to liaise with the managers of related regional projects funded by ReCAP. This includes the project on "Climate Adaptation: Risk Management and Resilience Optimisation for vulnerable road access in Africa" and the project on "The use of appropriate high-tech solutions for road network and condition analysis, with a focus on satellite imagery". For the former project, GEM will collect data in the project areas on climate vulnerability of roads and for the latter GEM will provide road condition data in order to "ground truth" data obtained using remote sensing including satellite imagery.

Annex A. Launch Meeting – Summary of Discussions

Project Objectives, Monitoring Tools and Self-Assessment Questionnaire

The Team Leader summarised background and objectives of the project. This was followed by presentations of the Advisory Team on road condition monitoring, social and economic indicators, capacity development plan and the asset management self-assessment questionnaire.

The following issues arose during the presentations:

- Gravel thickness measurements are important for the assessment of asset value on unpaved roads. However, the physical measurement of gravel thickness is time consuming and may be inaccurate. W Cape measure to a 5mm accuracy and take measurements every 1km. Consideration will be given to using the DCP for gravel thickness measurements.
- There is currently no accepted method of measuring material loss on roads through natural gravel (i.e. no imported wearing course required). Cross section profiles are used on experimental sections but would be too time consuming to measure on a network. Concrete benchmarks for these cross sections are often disturbed by local residents.
- The proposed mobile phone survey is useful even if the roughness data are not very accurate. In addition to roughness the GPS in the phone can be used to measure travel times on road links.
- The proposed socio/economic indicator for “length of road network maintained” may need a qualitative description of what the word “maintained” implies.
- It was agreed that “output indicators” for the socio/economic monitoring can be provided by the participating road agencies and related to their understanding of this term.
- The project needs to consider how to collect the Rural Access Indicator in the project areas. The RAI is currently being re-defined under a ReCAP/World Bank initiative. It is not expected that the project will lead to significant improvements in the RAI unless there is an investment in new roads or upgrading seasonal roads during the project period. However, a neglect of maintenance can lead to a reduction in the RAI and this should be measured.
- In Namibia the RAI has been estimated by counting roofs of households on Google Earth.
- There were different opinions on the wording of Q 1.1 of the self-assessment questionnaire and the sequence of the sub-questions (a to d). The participating countries were asked to provide written comments on the questionnaire before Friday 15th July.

Selection of Project Areas

Western Cape

- It is proposed to implement the project in the Overberg District Municipal area. The municipal centre, Caledon, is about 1-hour drive from Cape Town International Airport. This proposal was agreed.
- The project network has been identified from the provincial database and network characteristics including current condition and road asset value were presented.
- The project network includes 31 roads with total length 303 km.
- The network includes only unpaved roads.

Zambia

- The RDA has a mandate to provide care and maintenance and construction of all public roads in Zambia. It is empowered to appoint any institution as a road authority responsible for construction and maintenance of roads. All expenses incurred in construction and maintenance of roads are paid by the National Road Fund Administration (NRFA).
- Two options were given for the project area: Lundazi District in Eastern Zambia and Chongwe District near Lusaka. It was agreed that Chongwe District would be more appropriate for logistical reasons. The district road network in Chongwe is 383km. The network is all unpaved.
- The Ministry of Local Government has been consulted about the project but not yet the district council.
- Some of the district roads in Chongwe District were rehabilitated under an OPCR contract, but are no longer under maintenance by that method.
- The district road network is part of the national network held in the RDA database.
- The Planning Department in the Regional Office of the RDA will be responsible for data collection if the district is not able. However, it is expected that a Director of Engineering and a Road Engineer will be found in the district.
- The RDA has an environmental unit at head office but this is not represented at regional level. It is unlikely that there are staff in the district who could collect data for the socio/economic monitoring, but data should be available from departments of agriculture, health and education, which are devolved to district level.

Uganda

- It was proposed to include a network of national roads across 5 districts north of Jinja. This network comprised some paved but mainly unpaved roads. This network is under the responsibility of UNRA.
- The meeting felt that it would be preferable to select a lower level road network for the project in order to meet the overall objectives of the project and more in keeping with the aims of AFCAP. It was suggested that the district network for Kamuli District be included.

- The district headquarters at Kamuli are located 74km by road, north of Jinja, and therefore in reasonable proximity to Kampala. The district road network in Kamuli is about 452km. The network is all unpaved.
- The Uganda representatives were asked to conduct a feasibility study of using the Kamuli District road network for the project, in particular whether buy-in and commitment could be expected from the district authorities.
- It was noted that the districts in Uganda have a high level of autonomy and UNRA has no jurisdiction over them. However, the district councils can be expected to have a basic establishment including a district engineer, vehicles etc.
- The districts receive an annual allocation from the Road Fund for maintenance.

Sierra Leone

- The feeder roads network (4,150 km) is managed by the SLRA through the Feeder Roads Department. The rehabilitation and reconstruction of feeder roads is the sole responsibility of the SLRA but routine maintenance is the responsibility of the Local Councils under the decentralization policy. Funding is provided by the Road Maintenance Fund Administration (RMFA). 20% of the total maintenance budget of the RMFA is intended to go towards maintenance of Feeder Roads.
- Two districts were suggested for the project area: Tonkilili and Kono. Both districts have high agricultural potential and Kono is known for diamond deposits
- It was agreed that Tonkilili is preferred because it is closer to Freetown. The District headquarter town is Magburaka. The length of the feeder road network in the district is 606km. The network is all unpaved.
- Basic resources are available in the district to support the project (personnel, vehicles, computers). SLRA will augment these resources as and when required.

Topics for PhD Theses

Background

The project is supporting three PhD degrees at the University of Birmingham. The candidates are based in the three participating countries and are expecting to conduct their research on subjects closely related to asset management for rural roads. The launch meeting provided an opportunity to the students to present their proposed topics for research and to receive feedback from the other meeting participants on which options would be most relevant.

Summary of presentations

The research topics currently under consideration by the three candidates are as follows:

<u>Peter Kome (Sierra Leone)</u>

Three thesis subjects are under consideration:

- The development of an assessment methodology for rural road asset management

- Develop and prescribe an acceptable and appropriate management structure and capacity needs for rural roads asset management for the SLRA
- A risk based model for the management of rural road infrastructure in the light of climate change (with the emphasis on drainage and earthworks).

It was suggested that the third option may have less relevance to the GEM project than the other two options.

Dickson Ndhlovu (Zambia)

Title: ***Appropriate Mechanism for Rural Road Prioritization***

Aim: To develop an appropriate risk based mechanisms rural road prioritization taking into account social economic benefits and the impact of climate change.

This research is expected to contribute to the GEM project since road prioritisation is a component of road asset management. The research will be conducted at a local authority level.

(It is noted that Dickson Ndhlovu subsequently withdrew from the PhD programme due to work commitments).

Robert Kakiiza (Uganda)

Title: ***Rural Roads Total Asset Valuation***

Aim: To explore methods of calculating total value of the rural road asset based on physical, social, economic and other related aspects.

Road asset valuation is a key component of road asset management and therefore this research is expected to contribute directly to the aims of GEM. Simplified guidelines for road asset valuation will be developed for use by local road agencies and by non-technical persons.

Summary of Discussions

The group agreed that the topics suggested by the PhD candidates are generally appropriate to the aims of GEM and the wider aims of ReCAP. This is a requirement for the research to be supported by ReCAP. However, there must also be a clear differentiation between the three PhD research areas, avoiding significant overlap.

It was noted that none of the topics proposed had significant engineering technical content. It was suggested that relevant technical issues for rural road provision such as wearing course specifications, more durable surfacings etc. be introduced where possible.

It was suggested that each research project could use data from the other countries participating in GEM, rather than using data only from the country where the researcher is based.

The timing of the PhDs is an issue to be considered by ReCAP management. The minimum duration of the PhD research is three years, whereas the GEM implementation is scheduled to be completed in 29 months. The topics and aims of the PhDs must be formally approved by UoB and meet their requirements for a PhD.

Wrap-Up of Discussions and Next Steps

The Team Leader summarised the agreements made on the project methodology, project area selection and PhD theses and the next steps.

The next steps in the project implementation are:

1. Refinement of the data collection requirements for the road condition monitoring, social and economic monitoring indicators and the self-assessment questionnaire – next drafts to be completed by Friday 15th July 2016.
2. Refinement of the PhD topics to ensure there is clear differentiation between the three theses and that they are relevant to the GEM project and to incorporate more engineering technical content.
3. A visit by the Team Leader and Maintenance Expert to Zambia, Uganda and Sierra Leone in the week starting 18th July 2016. During these visits the team will meet key stakeholders, visit a sample of roads in the project network, initiate the road agency self-assessments and other data collection.
4. A visit to the three countries by the Rural Transport Economist and the Road Condition Monitoring Expert in mid-August 2016 to assess progress with the data collection.
5. Report on the project to the ARMFA General Assembly meeting to be held in Accra in September 2016.
6. The first Project Implementation Team meeting, which is expected to be held in the Western Cape in October 2016. The suggested venue is the Caledon Hotel and Spa.

Annex B. Attendance at Launch Meeting

Name	Position	Base	Email
AFCAP management			
Les Sampson	ReCAP Infrastructure Research Manager	Pretoria	Les.Sampson@cardno.uk.com
Research team			
Simon Gillett	Project Director (Formulation Phase)	UK	Simon.Gillett@roughton.com
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Kingstone Gongera	Road Maintenance Expert	Zimbabwe	ksgongera@gmail.com
Camilla Lema	Rural Transport Economist	Tanzania	camillalema@yahoo.com
Michael Burrow	Asset Management Expert	UK	M.P.Burrow@bham.ac.uk
Mike Pinard	Institutional and Financing Expert	Botswana	mipinard@global.bw
Gerrie van Zyl	Rural Roads Expert and Adviser to W Cape	Cape Town	gerriev@mycube.co.za
Country Representatives			
Aziz Kamal	Director General, SLRA	Sierra Leone	c/o tmannamara2003@gmail.com
Mark Rubarenzya	Head, Research and Development, UNRA	Uganda	Mark.RUBARENZYA@unra.go.ug
Joseph Goma	Principal Engineer - Materials (Research and Development Unit RDA)	Zambia	gomajm@gmail.com
Andre van der Gryp	Systems Manager, Western Cape Govt.	Cape Town	Andre.VanDerGryp@westerncape.gov.za
University of Birmingham students			
Peter Kome		Sierra Leone	kome1978sl@gmail.com
Robert Kakiiza		Uganda	eng.kakiiza@gmail.com
Dickson Ndhlovu		Zambia	dndhlovu200@gmail.com

Annex C. Itinerary for Initial Visit to Participating Countries

Sunday 17th July: Travel from Harare to Lusaka

Monday 18th July: Meeting at RDA Regional Office and visit to Chongwe District; meeting with District Commissioner

Tuesday 19th July: Meeting with NRFA, RDA (Head Office) and Chongwe District Council officials

Wednesday 20th July: Travel to Kampala

Thursday 21st July: Meeting with UNRA planning staff and AFCAP Uganda Steering Committee; travel to Jinja.

Friday 22nd July: Meeting with UNRA Station Manager in Jinja, meeting with District Engineer in Kamuli and visit to district roads.

Saturday 23rd July: Travel to Kampala, meeting with AFCAP Coordinator and UNRA Research Fellow.

Sunday 24th July: Travel to Freetown

Monday 25th July: Meetings at SLRA, Road Maintenance Fund and Ministry of Works

Tuesday 26th July: Travel to Tonkilili via Regional Office in Mile 91. Meeting with Chairman, councillors and district officials. Visit to feeder roads in the district.

Wednesday 27th July: Return to Freetown.

Thursday 28th July: Depart for Harare.

Annex D. People Met on Initial Visit

Zambia – RDA and NRFA

NAME	DEPT	DESIGNATION	EMAIL ADDRESS	MOBILE NUMBER
Elias Mwape	RDA-HQ	Director - Planning and Design (AFCAP National Coordinator)	elmwape@yahoo.co.uk emwape@roads.gov.zm	0977314406
Thompson Banda	RDA-HQ	Senior Manager – Research and Development.	tbanda@roads.gov.zm	0978480785
Dickson Ndhlovu	RDA-HQ	Senior Manager - Planning	dndhlovu200@gmail.com	0962491894
Joseph Goma	RDA –HQ	Principal Eng. Materials	jmgoma@roads.gov.zm	0977769296
Alinani Msisya	NRFA	Manager – Programming, Monitoring and Evaluation	alinani@nrfa.org.zm	0955822960
Joseph Mwinga	RDE Regional Office	Regional Engineer	Jmwinga@roads.gov.zm	0955771701
Victor Miti	RDA Lusaka Region	Eng. Planning & Design	vmiti@roads.gov.zm	0977722365
Annie Goma	RDA Lusaka Region	Technician Lusaka Region	akawsha@roads.gov.zm	0977841833

Zambia – Meeting at Chongwe District

NAME	DEPT	DESIGNATION	EMAIL ADDRESS	MOBILE NUMBER
Frazer Musonda	Office of the President	D.C	Pavor.metamorphic@gmail.com	0973110606
Eng. Peter Banda	Chongwe Council	Director of Works	pebar@yahoo.com	097735561
Charles Simulunda	Agriculture	Dist. Agric. Coordinator	charlesmulunda@yahoo.com	977379383
Longa Malama	Building Dept.	Dist. works Supervisor	longagodfrey@gmail.com	0977808606
Ireen Kayabala	Forestry	Dist. Forestry Officer	ikayabala@ahoo.com	0978815745
Malaishya Christopher	Education	Dist. Evaluation Standards Officer	christophermakishya@yahoo.com	0977622978
Maureen C Kabambi	Community Development	DCDO	Maura.chisala@yahoo.com	0977887387

Zamiwe Mbewe	District Admin/Water Resources Development	D.WO/DAO	Zamiwe.mbewe@yahoo.com	0977941913
Francis Mwanyasi	Min of Health CDHO	Environmental Health Officer	francismwanyasi1@yahoo.com	097765508

Uganda – UNRA Planning Department

NAME	DEPT	DESIGNATION	EMAIL ADDRESS	MOBILE NUMBER
Adwek M Jimmy	UNRA	Regional Manager	jimmyadwek@unra.gov.ug	0772510590
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Mugume Rodgers	UNRA	Research Fellow	rodgers.mugume@unra.gov.ug	256701836373
Chris Byaruhanga	UNRA	Network Engineer	chris.byarunhanga@unra.gov.ug	256701836373

Uganda – AFCAP National Steering Committee

NAME	DEPT	DESIGNATION	EMAIL ADDRESS	MOBILE NUMBER
Mbadhwe John	MOWT	Member steering Committee	Mbadhwejphn2000@yahoo.com	0712022113
Matovu Moses	CEDAT - MUK	Member steering Committee	mmatovu@tech.mak.ac.ug	0772507357
Maxwel Otim Onapu	UNGST	Member steering Committee	m.onapa@uncst.go.ug	0772997450
Mugume Rodgers	UNRA	Research Fellow	Rodgers.Mugume@unra.go.ug	256701836373

Uganda – Kamuli District

NAME	STATION	DESIGNATION
Nakombe DINAH	UNRA Jinja	Station Manager
Byamunhango ANATON	UNRA Jinja	Maintenance Technician
Higenyi GEORGE	UNRA Jinja	Supervisor works
Mugume RODGERS	Research Fellow UNRA HQ	UNRA HQ
Muzondo GRACE	District Engineer	District Engineer
Mufumbe DANIEL	Kamuli District	Kamuli Dist Assistant Engineering Officer

Sierra Leone – SLRA Head Office

NAME	POSITION	ORGANISATION
Memuna K Jalloh	Deputy Director General	SLRA
Samuel E Lewis	Chief Engineer	SLRA
Abdulai A Kamara	Director General	SLRA

Hassan A Turay	Director Admin	SLRA
Sidie M Jawara	Human Resource Manager	SLRA
Sheku M Kannah	Director Finance	SLRA
James A Lebbie	Chief Accountant	SLRA
Ibrahim A Mustapha	Chief Internal Auditor	SLRA
Valecious F.B. Coller	Head RAMPU	SLRA
Alfred O Momodu	CE/	SLRA
S. Clembo	B Director Maintenance	SLRA
A.K.P George	Snr Admin Officer	SLRA
K.S.B.	Chief Engineer Contracts	SLRA
Sorele I Kanu	Public Relations Officer	SLRA
Francis Bockarie	Chief Engineer Development	SLRA
Joyce M Bangura	Admin Officer	SLRA
Daniel J Wisman	Director of Development	SLRA
Tamba Amara	Chief Engineer Feeder Roads	SLRA
Peter Kome	C.E./DD	SLRA
Fasinah B Kamara	Sen Engineer	SLRA

Sierra Leone – Tonkolili District

NAME	CELL	ORGANIZATION / DESIGNATION	EMAIL
Tamba K. Amara	(2327) 664-9226	SLRA - Chief Engineer, Feeder Roads	tmannamara2003@gmail.com
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Albert B. Sovula	(2327) 645-6500	SLRA - Engineer-In-Charge, Mile-91 Region	albertsovula@yahoo.com
Mohamed S. Sankoh	(2327) 698-9423	Tonkolili District Council – Councillor	
Rugiatu Kamara	(2327) 653-0752	Tonkolili District Council – Councillor	rugiatuk2009@yahoo.com
Musa Mansaray	(2327) 675-1470	Presidential Rep. - Facilitator	mansaraymusa@yahoo.com
Alusine A. Sesay	(2327) 696-9668	Tonkilili District Council – Chairman	alusineasesay@gmail.com
Memuna K. Jalloh	(2327) 661-3936	SLRA - Deputy Director General	memunajalloh@yahoo.com

Annex E. Summary of District Roads Sector in Zambia

The entire classified road network for Zambia is held in the RDA GIS network management system. In Chongwe the district road network comprises about 400km of unpaved roads, however it was not clear which roads are in Chongwe district and which are in neighbouring districts. Some of the roads included in the initial list of road for the project were found to be in Rufunsa District (which previously was part of Chongwe District).

Some of the roads in the district were rehabilitated and maintained under an OPRC contract which concluded in 2013. Some were rehabilitated under other projects. At present there are no rehabilitation projects underway in the district but the Zambia National Service is expected to start working on some of the roads as a contractor to the RDA under a national programme. Current maintenance activities are limited to off-carriageway maintenance (mainly grass-cutting) which is contracted out by the RDA Regional Office.

Two roads were visited. Both roads had been surfaced with a course gravel material and were very rough in parts.

Figure 1: Typical Road Conditions in Chongwe District

The District Council is well staffed with the District Director of Public Works, Road Supervisor and directors of health, education, forestry, community services etc. The council has adequate premises for its operations and vehicles. Each sector collects relevant data from the communities, which is forwarded to the parent ministries at national level. The District Roads Supervisor conducts an annual condition assessment of the district road network, but evidently this is not very rigorous.

The District prepares an annual work plan for road maintenance which is sent to RDA for inclusion in the RDA annual work plan. Most of the works are contracted out by the RDA and supervised by consultants, but some projects are contracted by the provincial office of the Ministry of Local Government & Housing and supervised by the District. All projects appear

on the RDA annual work plan. In both cases the contractors' invoices are paid by the NRFA after certification either by the RDA or the District/MLGH.

The RDA coordinates the annual work plan for all roads but since the focus of RDA is on main roads that are where the bulk of the funding goes. There is no stipulation in the Road Fund Act of the proportion of the fund that should go to district roads. There is also no rural roads authority to represent the needs of the rural roads authorities. However, it is possible to make specific allocation to Chongwe District in the 2017 annual work plan as this is needed to support the project[1]. In the past the NRFA has made direct allocations to district councils for road works, though this was on donor-funded projects (e.g. DANIDA Community Access Improvement Project- CAIP) where the NFRA was managing donor project funds on behalf of the government.

RDA is currently preparing OPRC contracts for 15,000km of prioritised feeder roads. The duration of the contracts will be 10 years. The project will be co – funded by the government and the World Bank. It is likely that roads in Chongwe District will be included.

Zambia is going through a process of decentralisation with more responsibilities being given progressively to the districts. At present most of the road works carried out by the MLGH and district councils are on urban roads.

Community Development Funds are available for district road works but the mounts are small and their use tends to be highly politicised.

The following issues affecting the road sector were noted:

- The RDA is the road authority for all the roads in the country. No national institutions exist with overall responsibility for rural and urban roads.
- The Road Fund Act does not define the apportionment of funds to be used for rural, urban or trunk roads. It does not specify what portion should be used for construction, rehabilitation or maintenance.
- The allocation of funds is made according to the annual work plan prepared by the RDA for all the roads in the country. The money allocated by the Road Fund covers all the activities: road rehabilitation, construction and maintenance.
- The Ministry of Local Government and Housing has a structure of regional engineers responsible for roads but the relationship with RDA engineers is not very clear.

[1] It is noted that there is a proposal to implement the AFCAP pilot project on tractor-based maintenance also in Chongwe District.

Annex F. Summary of District Roads Sector in Uganda

The Ministry of Works is responsible for all roads in Uganda. Responsibility for national roads is delegated to the Uganda National Roads Authority (UNRA). District roads are under the district councils, with coordination and oversight from the Works Department in the Ministry of Local Government (MOLG). UNRA works contracts for maintenance are funded from the Uganda Road Fund. The Uganda Road Fund also provides funds to the districts for maintenance works. There is a direct state budget allocation to the districts for road maintenance, but it is now very small.

The UNRA road network is held in a central database that can be accessed by the Stations across the country. A baseline condition survey was carried out by consultants, and annual condition surveys are carried out in-house. Maintenance activities are prioritised and implemented at Station level, where they have access to the ROMAPs management program. The UNRA asset management system gives little attention to the planning of routine maintenance.

The Districts' road network across the country was captured in the recent past and is included in a GIS database housed by the Ministry of Works and Transport (MOWT). The database includes a network inventory and rapid condition survey. The database includes some traffic counts. Layers including schools, health centres and administrative posts are included. The database has been installed in the district but is not yet easily accessible by the District Engineer.

The Kamuli district road network comprises about 180km of roads which are under UNRA and about 500km of roads which are under the district council. The District Engineer reported that an annual condition assessment of the district road network across the country was carried out in December 2015, though this is not a comprehensive exercise and further training of technical staff may be required. This should include staff from the Ministry and Makerere University. For the sustainability of the research it is important that the university be involved in capacity building and knowledge transfer. The districts experience high staff turnover and staff may leave soon after receiving training.

A draft annual work plan is prepared by the district and is sent to MOLG for approval. Despite the availability of significant data on the district networks, the prioritisation of the annual work programme may appear to be done according to political pressure i.e. roads that receive the most complaints receive the highest priority.

Some of the works on the district roads are contracted out while the rest of the works are carried out by the in-house works unit. The district equipment pool includes a grader, water bowser and roller but only the grader was seen on site. The roller had been vandalised while parked on site and was under repair. All road maintenance works are funded by the Uganda Road Fund, and the equipment in the district was provided by the government. The district

was not required to contribute to the capital cost of the equipment but is responsible for its maintenance.

Periodic maintenance activities were underway on both UNRA and district roads during the site visit. The UNRA works were being executed by a private contractor. The works included reshaping of the road and regravelling. The district road works were being implemented in-house and included reshaping of an earth road using a motorised grader. This reshaping will be followed by spot gravelling.

Soils in the project area are lateritic. Laterite gravel was being placed on the UNRA road. The layer thickness was reported to be 100mm. As a result, frequent re-gravelling is required (the previous gravelling was carried out 3 years ago). It would be more efficient to lay a thicker wearing course with a longer life.

Figure 2: Typical Road Conditions and Maintenance Works in Kamuli District

Drainage is difficult on much of the road network in the district with many low swamp areas. Road improvement works require the construction of low embankments with culverts to allow the flow of water under the road. Despite high annual rainfall in the district it was observed that culverts were missing in several locations on the roads visited and there were very few mitre drains.

The following issues affecting the road sector were noted:

- Limited funding for road maintenance and planning (especially in relation to road development) which has resulted in the current poor condition of the roads.
- Lack of trained personnel at all levels. Most work is done through technical assistance and when the programmes end there is no continuity. For example, from 2007 to 2011 UNRA collected a lot of data for the road asset management systems but this has not been functionalised due to limited capacity.
- The computer systems developed and used for the asset management do not include routine maintenance.
- Generally, UNRA has suffered high staff turnover in the last five years.

Annex G. Summary of Feeder Roads Sector in Sierra Leone

The Sierra Leone Roads Authority (SLRA) has responsibility of administration, management and control of the national road network. This includes Class A (primary) roads, Class B (secondary) roads, and Class F (Feeder) roads. Feeder roads are further divided into sub-class F1, F2 and F3. Class F1 has a carriage way of 6m plus 1m shoulders on either sides, F2 roads have a carriageway width of 6m whereas class F3 roads have a carriageway with of 4.5m. Most of the feeder roads are categorised as F2.

The government has enacted and Feeder Roads Policy. The policy implementation is overseen by a Steering Committee chaired by the Minister of Works, Housing and Infrastructure and comprising the SLRA as secretariat and member, RMFA and other key ministries and stakeholders. The Steering Committee reviews and approves all feeder road programmes, whether donor or government funded, and approves the annual budgets of the local councils.

The SLRA operates through regional offices. The regional office located at Mile 91 covers Tonkolili and Moyamba Districts. SLRA, through the Mechanical Services Unit previously operated an equipment hire facility but most of the equipment is now derelict. All construction works are outsourced. Maintenance works on Class A and B national roads are outsourced by SLRA.

District councils were re-established in Sierra Leone in 2004 through a new Local Government Act. The council structure includes the Chairman and Deputy Chairman, who are elected representatives. Professional staff include the District Administrator and representatives of all sector line ministries. The districts comprise a number of chiefdoms and two of the total number of paramount chiefs attend council meetings as councillors. The chiefdom structure comprises the headmen within the Paramount Chief's area. There are also Area Development Committees within the District Council responsible for the identification and prioritisation of District Development Plans.

The district councils are responsible for routine maintenance of the rehabilitated feeder roads. Implementation is through a mixture of contracting and mobilization of community groups for minor activities. The community groups are provided with tools procured by the council. Maintenance works contracted by the councils may include some components of construction, rehabilitation or spot improvements. The SLRA has an engineer and technicians based in each district. The SLRA staff work closely with technical staff employed by the council, including the District Engineer. The SLRA District Engineer provides support to the District Council and Council Engineer. The Councils employ graduate engineers but they tend to have little experience.

The feeder roads maintenance works are funded from the RMFA based on the approved annual work plan. Quarterly tranches are sent direct to the districts. The RMFA receives reports from the councils accounting for the expenditure and do their own spot checks of work done.

The RMFA is under the Ministry of Finance. It was established in 2010. Prior to the establishment of the RMFA, the Road Fund was administered by SLRA. The separation of the financing and operational functions has apparently led to delays in the flow of funds for maintenance and increase in the maintenance backlog.

The feeder roads network in Tonkolili is reported as 605 km. This includes all feeder and community access roads in the district. There is no inventory or map clearly showing the details and location of these roads. The roads are not numbered.

There was no maintenance underway on the roads that were visited at the time of the visit. Construction works are ongoing with funding from the EU, but were suspended at the time of the visit due to the onset of the rains. The road under construction was in reasonable condition, particularly considering that construction was not complete. However, it is evident that the width of 6m is unnecessary for this class of road and results in an unstable cross-section. A gulley was already seen to be forming parallel to the edge of the road (see photographs in Figure 4.2). A 4.5m wide carriageway would be more stable in this high rainfall area. It is evident from the used width of existing road (Figure 4.3) that a narrower carriageway can cater for the traffic using the road.

Figure 3: Feeder Road under Construction

Figure 4: Existing Feeder Roads and Village

The soils in the project area are generally sandy and therefore stable when wet though erodible on slopes. The roads that were visited passed through areas of natural gravel

(evident in both of the photographs in Figure 4.2) and did not require an imported wearing course. Where a wearing course is required there is plentiful supply of good gravel, including nodular laterites.

The terrain in the project area is generally rolling with some hills and many rivers and streams. The roads that were seen lacked sufficient culverts and mitre drains.

The following issues affecting the road sector were noted:

- District councils were disbanded in 1972 and were re-established in 2004. The capacity of these councils is still limited and the SLRA District Engineers support to each council to assist the council engineer in road related activities.
- There is a Feeder Roads Policy administered by a committee responsible for the management of feeder roads. The policy is being consider for review under a World Bank funded project.
- Construction and rehabilitation of feeder roads is done by SLRA and the roads are handed to the councils for managing maintenance.
- The district council is headed by a council chairman supported by a deputy council chairman. These are political appointees working full time in the council offices. A chief administrative officer works alongside the council chairman and is responsible for administrative issues.

Annex H. Questionnaire for Social and Economic Indicators

Question		Trading centre/village									
		1	2	3	4	5	6	7	8	9	10
General											
1	Name of trading centre/village										
2	GPS coordinates										
3	Map coordinates										
4	Population										
5	Distance from nearest paved road										
6	Distance from district centre. *Name of centre:*										
7	Average travel time to district centre (by different modes of transport)										
8	Name of the road serving the trading centre/village										
9	How many days of the year is the road closed due to rains?										
Availability and cost of transport											
10	No. of private transport operators serving the trading centre/village										
10.1	Light vehicle										
10.2	Bus/combi										
10.3	Motorcycle (boda-boda)										
10.4	Freight transport /trucks										
11	No. of available trips to district centre per day (on a normal day)										
11.1	Light vehicle										
11.2	Bus/combi										
11.3	Freight transport /trucks										
12	No. of available trips to district centre per day (on a market day)										
12.1	Light vehicle										
12.2	bus/combi										
12.3	Freight transport /trucks										
13	Fares on public transport to the district centre (passenger-km)										
13.1	Light vehicle										
13.2	Bus/combi										
13.3	Motorcycle (boda-boda)										
14	Cost of freight transport to the district centre (ton-km)										
14.1	Truck (….tons)										
14.2	Light vehicle (…tons)										
14.3	IMTs /motorcycle (…tons)										

Price of goods in the trading centre/village											
15	Prices of three items exported from the village (e.g. potatoes, rice, maize, charcoal)										
15.1	*Item 1 (name)- state units:*										
15.2	*Item 2 (name)- state units:*										
15.3	*Item 3 (name)- state units:*										
16	Prices of three items imported into the village (e.g. petrol, soap, batteries, seed, fertilser)										
16.1	*Item 1 (name)- state units:*										
16.2	*Item 2 (name)- state units:*										
16.3	*Item 3 (name)- state units:*										
Education- nearest school - *Name of school:*											
17	Average time to reach the nearest school from the trading centre by different modes of transport (by gender and age)										
18	No of pupils enroled at the nearest school (gender disaggregated)										
19	Average monthly pupil attendance rate for past year (gender disaggragated)										
20	No of staff employed at the school (gender disaggregated)										
21	Average monthly staff attendance rate for the past year (gender disaggregated)										
Road safety											
22	Is road safety awareness taught to children at the school?										
23	Are road safety awareness presentations made to adults in the village?										
24	No. of accidents on the road serving the trading centre /village for past year										
Health - nearest health centre/clinic- *Name of health centre/clinic* :											
25	Average time to reach the nearest health centre from the trading centre by different modes of transport (by gender and age)										
26	Average no of health workers at clinic each month for the past year (gender disaggregated)										
27	Average no of patients treated each month for the past year (gender disaggregated)										
28	Is there an ambulance service available from the clinic to the district hospital?										
Agriculture											
29	What is the average no of visits per mth by an extension worker to the village?										
30	Price of main cash crop produce in the district centre (per kg)										
31	Price of main cash crop produce in the village/trading centre (per kg)										
32	Farm-gate price of main cash crop produce in the village (per kg)										
Economic activities - non-farm											
33	Factories, local industries /cottage industries in the village/trading centre (type & no.)										
34	No. of shops / kiosks in the village/trading centre										

Price of goods in the district centre (same items as priced in the village/trading centre)		Price
35	Prices of the three items exported from the village	
35.1	*Item 1 (name)- state units:*	
35.2	*Item 2 (name)- state units:*	
35.3	*Item 3 (name)- state units:*	
36	Prices of the three items imported into the village	
36.1	*Item 1 (name)- state units:*	
36.2	*Item 2 (name)- state units:*	
36.3	*Item 3 (name)- state units:*	

Annex I. Questionnaire for Self-Assessment

Self-Assessment Performance Evaluation (National Level)

Building Block 1: External

Key objective: Facilitate delivery of a broad range of benefits to rural communities through effective interaction with external stakeholders.

Element: Stakeholder engagement

Issue: Engagement with stakeholders by means of informed consultations and a culture of open communications and knowledge sharing in order to:

- Understand their needs and expectations by helping to identify local requirements, alternatives and solutions to problems;
- Lobby political support for adequate AM plans and related maintenance funding;
- Influence the development of the district's AM strategies;
- Communicate the district's programmes and targets;
- Assess how the district's performance is rated by stakeholders.

QUESTION	YES/NO	JUSTIFICATION/COMMENT
1.1 (a) Has the agency developed guidelines for community consultation?		
1.1 (b) Does the agency conduct consultations with members of the public (road users, local inhabitants and local businesses) at least annually?		
1.1 (c) Does the agency use a range of techniques to communicate with stakeholders e.g. surveys, media releases, newsletters, telephone hotlines and social media?		
1.1 (d) Does the agency communicate its maintenance and development works programmes with stakeholders (i.e. road users, local inhabitants and local businesses)?		
1.2 (a) Does the agency interact at council level with the Roads Committee responsible for road related issues?		
1.2 (b) Does the agency table road budgets at council meetings for approval before implementing works, and periodic acquittal reports on usage of funds?		
1.2 (c) Does the agency discuss its strategic plans at council meetings to map out plans for short, medium and long term programmes?		
1.2 (d) Does the roads agency coordinate district programmes at provincial and national level through established council structures?		

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).

QUESTION	YES/NO	JUSTIFICATION/COMMENT
2.1 (a) Does the agency have an informal AM policy and associated strategy?		
2.1 (b) Does the agency have a formal AM policy?		
2.1 (c) Does the agency's AM policy align with its corporate vision and mission?		
2.1 (d) Does the agency's AM policy take into account stakeholder needs and expectations?		
2.2 (a) Have the basic levels of service been defined?		
2.2 (b) Are the differing requirements of stakeholders understood?		
2.2 (c) Are stakeholders consulted when determining the levels of service?		
2.2 (d) Is the level of service consultation strategy developed and implemented?		
2.3 (a) Is the contribution of the road network to the road agency's objectives defined?		
2.3 (b) Are the levels of service linked to measures of asset performance?		
2.3 (c) Is the cost to fulfil the level of service requirements known?		
2.3 (d) Are the levels of service integral to decision making and business planning?		
2.4 (a) Are emergency responses understood by key members of staff?		
2.4 (b) Does the agency have a formal emergency response plan?		
2.4 (c) Is the safety of infrastructure routinely assessed?		
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)?		

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?		
2.5 (b) Are the roles, responsibilities and organisational commitment for AM documented and communicated to all relevant people?		
2.5 (c) Does the agency have an adequate complement of appropriately qualified staff with designated responsibilities to undertake its AM mandate?		
2.5 (d) Is the agency able to outsource its non-core activities (e.g. instrumented surveys such as roughness and deflections)?		
2.6 (a) Does the agency offer training opportunities for staff?		
2.6 (b) Does AM specific training occur for primary staff?		
2.6 (c) Has the agency implemented an on-going training programme to address required AM competencies?		
2.6 (d) Is there a formal AM capacity building programme which is routinely monitored?		
2.7 (a) Are RA salaries much lower (+/-50%) than comparable private sector jobs?		
2.7 (b) Are RA salaries lower (+/-20%) than comparable private sector jobs?		
2.7 (c) Are RA salaries roughly the same as comparable private sector jobs?		
2.7 (d) Are RA salaries greater than comparable private sector jobs?		

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.

QUESTION	YES/NO	JUSTIFICATION/COMMENT
3.1 (a) Does the agency depend only on the consolidated fund for road maintenance?		
3.1 (b) Is the funding received from the consolidated fund related to road performance?		
3.1 (c) Does the agency get a fixed share of its maintenance funding requirement from a Road Fund?		
3.1 (d) Does the agency get a variable share of its maintenance funding requirement from the Road Fund that is related to road performance?		
3.2 (a) Is the percentage of the budgeted funding obtained < 30 % of that required?		
3.2 (b) Is the percentage of the budgeted funding obtained 30%- 59% of that required.		
3.2 (c) Is the percentage of the budgeted funding obtained 60% - 89% of that required?		
3.2 (d) Is the percentage of the budgeted funding obtained 90% - 100%of that required?		
3.3 (a) Does the agency carry out asset valuation?		
3.3 (b) Is the value of the agency's road asset decreasing?		
3.3 (c) Is the value of the agency's road asset stable?		
3.3 (d) Is the value of the agency's road asset increasing?		
3.4 (a) Is the percentage of the maintenance funding obtained ≥ 0.1% of the asset value of the road network?		
3.4 (b) Is the percentage of the maintenance funding obtained ≥0.5% of the asset value of the road network?		
3.4 (c) Is the percentage of the maintenance funding obtained ≥1 % of the asset value of the road network?		

3.4 (d) Is the percentage of the maintenance funding obtained ≥ 1.5% of the asset value of the road network?		
3.5 (a) Does the agency carry out annual and multi-annual financial forecasting?		
3.5 (b) Are the financial forecasts based on current Asset Management Plan (AMP) outputs?		
3.5 (c) Are the financial forecasts based on current comprehensive AMPs with reasoned supporting assumptions?		
3.5 (d) Are the financial forecasts based on current comprehensive advanced AMPs with detailed supporting assumptions and high confidence in accuracy?		
3.6 (a) Does the agency operate an accounting system?		
3.6 (b) Are the annual accounts finalised within the first quarter of the following year?		
3.6 (c) Are the accounts audited annually?		
3.6 (d) Are the accounts published annually?		

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.

QUESTION	YES/NO	JUSTIFICATION/COMMENT
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)?		
4.1 (b) Does the AM system enable treatment cost and historical maintenance information to be stored and accessed?		
4.1 (c) Does the AM system allow for the comparison of the current condition of assets with intervention levels to determine maintenance requirements?		
4.1 (d) Can the AM system facilitate the prioritisation of road sections requiring maintenance?		
4.2 (a) Has the road agency developed intervention levels for all its principal asset types which require periodic maintenance (carriageway, shoulders, bridges, culverts)?		
4.2 (b) Are the intervention levels directly associated with defined levels of service?		
4.2 (c) Have the intervention levels been determined using an economic analysis.		
4.2 (d) Have the intervention levels been determined using socio-economic-political (i.e. multi-criteria) analysis?		
4.3 (a) Does the agency produce annual maintenance and development plans?		
4.3 (b) Does the agency produce annual prioritised maintenance and development plans?		

4.3 (c) Does the agency provide prioritised medium term (3-5 year) maintenance plans?		
4.3 (d) Does the agency provide prioritised long term (> 5 year) maintenance plans?		
4.4 (a) Does the agency keep records of maintenance and development work activities?		
4.4 (b) Is maintenance and development planned and prioritised according to asset condition?		
4.4 (c) Is maintenance and development prioritised using a cost benefit approach?		
4.4 (d) Is maintenance and development expenditure prioritised using techniques which consider economic and social benefit?		
4.5 (a) Does the agency keep a record of maintenance / unfunded works backlog?		
4.5 (b) Does the agency have a strategy to reduce maintenance backlog based on a percentage of the available development budget?		
4.5 (c) Does the agency prioritise the reduction of maintenance backlog using an economic analysis?		
4.5 (d) Does the agency prioritise the reduction of maintenance backlog using risk management techniques?		
4.6 (a) Does the agency carry out basic demand (traffic) forecasting?		
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)?		
4.6 (c) Is traffic demand forecast based on mathematical analysis of historical trends?		
4.6 (d) Are primary economic factors used when forecasting demand?		
4.7 (a) Does the agency schedule capital projects using staff judgement, taking into consideration government policy and political drivers?		
4.7 (b) Are projects identified using input from operational staff, estimates of service lives, traffic demand modelling and accident analysis?		
4.7 (c) Are major capital projects for the next 10 years identified and prioritised taking into account socio-political-economic requirements?		
4.7 (d) Does the agency use advanced formalised socio- economic-political decision making techniques to identify major capital expenditure?		

Building Block 5: Technical

Key objective: Identification and ddesription 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.

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

5.4 (a) Does the agency carry out annual visual condition assessment surveys for carriageways, shoulders?		
5.4 (b) Are the visual condition assessments carried out in accordance with well documented, standardised procedures?		
5.4 (c) Does the agency measure gravel roads: gravel loss and corrugation annually, and for sealed roads: roughness and cracking annually and deflection at least every 5 yrs?		
5.4 (d) Are the results of the condition assessment and other road recorded in a computerised AM system?		
5.5 (a) Does the agency estimate asset utilization (traffic) on its network?		
5.5 (b)Does the agency measure asset utilization (traffic) annually on its major roads?		
5.5 (c) Does the agency project asset utilization across its network from annual measures of utilization of a sampled number of roads		
5.5 (d) Does the agency assess bottlenecks on its network?		

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.

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

Self-Assessment Performance Evaluation (District Level)

Building Block 1: External

Key objective: Facilitate delivery of a broad range of benefits to rural communities through effective interaction with external stakeholders.

Element: Stakeholder engagement

Issue: Engagement with stakeholders by means of informed consultations and a culture of open communications and knowledge sharing in order to:

- Understand their needs and expectations by helping to identify local requirements, alternatives and solutions to problems;
- Lobby political support for adequate AM plans and related maintenance funding;
- Influence the development of the district's AM strategies;
- Communicate the district's programmes and targets;
- Assess how the district's performance is rated by stakeholders.

	QUESTION	YES/NO	JUSTIFICATION/COMMENT
1.1 (a)	Does the district communicate its maintenance and development works programmes with stakeholders (i.e. road users, local inhabitants and local businesses)?		
1.1 (b)	Does the district conduct consultations with members of the public (road users, local inhabitants and local businesses) at least annually?		
1.1 (c)	Does the district use a range of techniques to communicate with stakeholders e.g. surveys, media releases, newsletters, telephone hotlines and social media?		
1.1 (d)	Does the district have developed guidelines for community consultation?		
1.2 (a)	Does the district have developed guidelines for community consultation?		
1.2 (b)	Does the district table road budgets at council meetings for approval before implementing works, and periodic acquittal reports on usage of funds?		
1.2 (c)	Does the district discuss its strategic plans at council meetings to map out plans for short, medium and long term programmes?		
1.2 (d)	Does the district coordinate district programmes at district, provincial and national level and through established council structures?		

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).

	QUESTION	YES/NO	JUSTIFICATION/COMMENT
2.1 (a)	Does the district have a corporate vision and mission statement?		
2.1 (b)	Does the district's mission statement take into account stakeholder needs and expectations?		
2.2(a)	Have the basic levels of service for roads been defined?		
2.2 (c)	Are stakeholders consulted when determining the levels of service?		
2.3 (a)	Is the contribution of the road network (asset value) to the district understood?		
2.3 (b)	Is the cost to fulfil the level of service requirements known?		
2.4 (a)	Are emergency responses understood by key members of staff?		
2.4 (b)	Does the district have a formal emergency response plan?		
2.4 (c)	Is the safety of infrastructure routinely assessed?		
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)?		
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?		
2.5 (b)	Are the roles, responsibilities and organisational commitment for AM documented and communicated to all relevant people (job descriptions)?		

2.5 (c)	Does the district have an adequate complement of appropriately qualified staff with designated responsibilities to undertake its AM mandate?		
2.5 (d)	Is the district able to outsource its non-core activities (e.g. instrumented surveys such as roughness and deflections)?		
2.6 (a)	Does the district receive/offer training opportunities for staff?		
2.6 (b)	Does AM specific training occur for primary staff?		
2.6 (c)	Does the district implement an on-going training programme to address required AM competencies?		
2.6 (d)	Is there a formal AM capacity building programme which is routinely monitored?		
2.7 (a)	Are district engineer salaries much lower (+/-50%) than comparable private sector jobs?		
2.7 (b)	Are district engineer salaries lower (+/-20%) than comparable private sector jobs?		
2.7 (c)	Are district engineer salaries roughly the same as comparable private sector jobs?		
2.7 (d)	Are district engineer salaries greater than comparable private sector jobs?		

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.

QUESTION	YES/NO	JUSTIFICATION/COMMENT
3.1 (a) Does the district depend only on the consolidated fund for road maintenance?		
3.1 (b) Is the funding received from the consolidated fund related to road performance?		
3.1 (c) Does the district get a fixed share of its maintenance funding requirement from a Road Fund?		
3.1 (d) Does the district get a variable share of its maintenance funding requirement from the Road Fund that is related to road performance?		
3.2 (a) Is the percentage of the budgeted funding obtained < 30 % of that required?		
3.2 (b) Is the percentage of the budgeted funding obtained 30%- 59% of that required?		
3.2 (c) Is the percentage of the budgeted funding obtained 60% - 89% of that required?		
3.2 (d) Is the percentage of the budgeted funding obtained 90% - 100%of that required?		
3.3 (a) Does the district carry out asset valuation?		
3.3 (b) Is the value of the district's road asset decreasing?		
3.3 (c) Is the value of the district's road asset stable?		
3.3 (d) Is the value of the district's road asset increasing?		
3.4 (a) Is the percentage of the maintenance funding ≥ 0.1% of the asset value of the road network?		

3.4 (b)	Is the percentage of the maintenance funding obtained ≥ 0.5% of the asset value of the road network?		
3.4 (c)	Is the percentage of the maintenance funding obtained ≥ 1 % of the asset value of the road network?		
3.4 (d)	Is the percentage of the maintenance funding obtained ≥ 1.5 % of the asset value of the road network?		
3.5 (a)	Does the district carry out annual and multi-annual financial forecasting?		
3.5 (b)	Are the financial forecasts based on current Asset Management Plan (AMP) outputs?		
3.6 (a)	Does the district operate an accounting system?		
3.6 (b)	Are the accounts audited annually?		
3.6 (c)	Are the accounts published annually?		

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.

	QUESTION	YES/NO	JUSTIFICATION/COMMENT
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)?		
4.1 (b)	Does the AM system enable road treatment cost and historical maintenance information to be stored and accessed?		
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?		
4.1 (d)	Can the AM system facilitate the prioritisation of road sections requiring maintenance?		
4.2 (a)	Has the district developed intervention levels for all its principal asset types which require periodic maintenance (carriageway, bridges, and culverts)?		
4.2 (b)	Are the intervention levels directly associated with defined levels of service?		
4.2 (c)	Have the intervention levels been determined using an economic analysis?		
4.2 (d)	Have the intervention levels been determined using socio-economic-political (i.e. multi-criteria) analysis?		
4.3 (a)	Does the district produce annual maintenance and development plans?		

4.3 (b)	Does the district produce annual prioritised maintenance and development plans?		
4.3 (c)	Does the district provide prioritised medium term (3-5 year) maintenance plans?		
4.4 (a)	Does the district keep records of maintenance and development work activities?		
4.4 (b)	Is maintenance and development prioritised according to asset condition?		
4.4 (c)	Is maintenance and development prioritised using a cost benefit approach?		
4.4 (d)	Is maintenance and development expenditure prioritised using techniques which consider economic and social benefit?		
4.5 (a)	Does the district keep a record of maintenance / unfunded works backlog?		
4.5 (b)	Does the district have a strategy to reduce maintenance backlog based on a percentage of the available development budget?		
4.5 (c)	Does the district prioritise the reduction of maintenance backlog using an economic analysis?		
4.5 (d)	Does the district prioritise the reduction of maintenance backlog using risk management techniques?		
4.6 (a)	Does the district carry out basic demand (traffic) forecasting?		
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)?		
4.7 (a)	Does the district schedule capital projects using staff judgement, taking into consideration government policy and political drivers?		
4.7 (b)	Are projects identified using input from operational staff, estimates of service lives, traffic demand modelling and accident analysis?		
4.7 (c)	Are major capital projects for the next 10 years identified and prioritised taking into account socio-political-economic requirements?		
4.7 (d)	Does the district use advanced formalised socio- economic-political decision making techniques to identify major capital expenditure?		

Building Block 5: Technical

Key objective: Identification and ddesription 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.

QUESTION		YES/NO	JUSTIFICATION/COMMENT
5.1 (a)	Does the district have a road referencing system based on routes and nodes between centres of population?		
5.1 (b)	Is the road referencing system based on road sections (< 5 km) with homogeneous characteristics?		
5.1 (c)	Is the road referencing system based on sub-sections (homogenous sections of 200 m lengths)?		
5.1 (d)	Is the road referencing system GIS based?		
5.2 (a)	Does the district have an item inventory recording basic road surface types (earth, gravel or sealed)?		
5.2 (b)	Does the district undertake an inventory of all principal assets (carriageway, shoulders, bridges, culverts, side drains)?		
5.2 (c)	Does the inventory include the service lives of all principal assets?		
5.2 (d)	Does the district have deterioration models for all principal assets?		
5.3 (a)	Is the road inventory based on broad assumptions or incomplete data?		
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?		
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?		
5.3 (d)	Is there an established system of systematic and documented data collection for all principal assets on a sub-section basis?		

5.4 (a)	Does the district carry out annual visual condition assessment surveys for carriageways, shoulders?		
5.4 (b)	Are the visual condition assessments carried out in accordance with well documented, standardised procedures?		
5.4 (c)	Does the district measure gravel roads: gravel loss and corrugation annually, and for sealed roads: roughness and cracking annually and deflection at least every 5 years?		
5.4 (d)	Are the results of the condition assessment and other road recorded in a computerised AM system?		
5.5 (a)	Does the district estimate asset utilization (traffic) on its network?		
5.5 (b)	Does the district measure asset utilization (traffic) annually on its major roads?		
5.5 (c)	Does the district forecast asset utilization across its network from annual measures of utilization of a sampled number of roads?		
5.5 (d)	Does the district assess bottlenecks on its network?		

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.

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

Self-Assessment Performance Evaluation (Sierra Leone)

Building Block 1: External

Key objective: Facilitate delivery of a broad range of benefits to rural communities through effective interaction with external stakeholders.

Element: Stakeholder engagement

Issue: Engagement with stakeholders by means of informed consultations and a culture of open communications and knowledge sharing in order to:

- Understand their needs and expectations by helping to identify local requirements, alternatives and solutions to problems;
- Lobby political support for adequate AM plans and related maintenance funding;
- Influence the development of the district's AM strategies;
- Communicate the district's programmes and targets;
- Assess how the district's performance is rated by stakeholders.

QUESTION	YES/NO	JUSTIFICATION/COMMENT
1.1 (a) Does the agency communicate its maintenance and development works programmes with stakeholders (i.e. road users, local inhabitants and local businesses)?		
1.1 (b) Does the agency conduct consultations with members of the public (road users, local inhabitants and local businesses) at least annually?		
1.1 (c) Does the agency use a range of techniques to communicate with stakeholders e.g. surveys, media releases, newsletters, telephone hotlines and social media?		
1.1 (d) Does the agency have developed guidelines for community consultation?		
1.2 (a) Does the agency interact at District council level with the Roads Committee responsible for road related issues?		
1.2 (b) Do the agency and Councils meet to approve road budgets before implementation of works and periodic acquittal reports on usage of funds?		
1.2 (c) Do the agency and councils discuss the strategic plans to map out plans for short, medium and long term programmes?		
1.2 (d) Does the roads agency coordinate district programmes at provincial and national level through established council structures?		

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).

QUESTION	YES/NO	JUSTIFICATION/COMMENT
2.1 (a) Does the agency have an informal AM policy and associated strategy for feeder roads??		
2.1 (b) Does the agency have a formal AM policy? for feeder roads?		
2.1 (c) Does the agency's AM policy align with its corporate vision and mission?		
2.1 (d) Does the agency's AM policy take into account stakeholder needs and expectations for feeder roads?		
2.2 (a) Have the basic levels of service been defined for feeder roads?		
2.2 (b) Are the differing requirements of stakeholders understood?		
2.2 (c) Are stakeholders consulted when determining the levels of service?		
2.2 (d) Is the level of service consultation strategy developed and implemented?		
2.3 (a) Is the contribution of the road network to the road agency's objectives defined?		
2.3 (b) Are the levels of service linked to measures of asset performance?		
2.3 (c) Is the cost to fulfil the level of service requirements known?		
2.3 (d) Are the levels of service integral to decision making and business planning?		
2.4 (a) Are emergency responses understood by key members of staff?		
2.4 (b) Does the agency have a formal emergency response plan for feeder roads?		
2.4 (c) Is the safety of feeder road infrastructure routinely assessed?		

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) on feeder roads?		
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?		
2.5 (b) Are the roles, responsibilities and organisational commitment for AM documented and communicated to all relevant people?		
2.5 (c) Does the agency have an adequate complement of appropriately qualified staff with designated responsibilities to undertake its AM mandate?		
2.5 (d) Is the agency able to outsource its non-core activities (e.g. instrumented surveys such as roughness and deflections)?		
2.6 (a) Does the agency offer training opportunities for staff?		
2.6 (b) Does AM specific training occur for primary staff?		
2.6 (c) Has the agency implemented an on-going training programme to address required AM competencies?		
2.6 (d) Is there a formal AM capacity building programme which is routinely monitored?		
2.7 (a) Are agency salaries much lower (+/-50%) than comparable private sector jobs?		
2.7 (b) Are agency salaries lower (+/-20%) than comparable private sector jobs?		
2.7 (c) Are agency salaries roughly the same as comparable private sector jobs?		
2.7 (d) Are agency salaries greater than comparable private sector jobs?		

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.

QUESTION	YES/NO	JUSTIFICATION/COMMENT
3.1 (a) Does the agency depend only on the consolidated fund for road maintenance?		
3.1 (b) Is the funding received from the consolidated fund related to road performance?		
3.1 (c) Does the agency get a fixed share of its maintenance funding requirement from a Road Fund?		
3.1 (d) Does the agency get a variable share of its maintenance funding requirement from the Road Fund that is related to road performance?		
3.2 (a) Is the percentage of the budgeted funding obtained < 30 % of that required?		
3.2 (b) Is the percentage of the budgeted funding obtained 30%- 59% of that required		
3.2 (c) Is the percentage of the budgeted funding obtained 60% - 89% of that required?		
3.2 (d) Is the percentage of the budgeted funding obtained 90% - 100%of that required?		
3.3 (a) Does the agency carry out asset valuation?		
3.3 (b) Is the value of the agency's road asset decreasing?		
3.3 (c) Is the value of the agency's road asset stable?		
3.3 (d) Is the value of the agency's road asset increasing?		
3.4 (a) Is the annual percentage of the maintenance funding obtained ≥ 0.1% of the asset value of the road network?		
3.4 (b) Is the percentage of the maintenance funding obtained ≥0.5% of the asset value of the road network?		
3.4 (c) Is the percentage of the maintenance funding obtained ≥1 % of the asset value of the road network?		

3.4 (d) Does the agency have a policy for distribution of the road fund between different classes of road?		
3.5 (a) Does the agency carry out annual and multi-annual financial forecasting?		
3.5 (b) Are the financial forecasts based on current Asset Management Plan (AMP) outputs?		
3.5 (c) Are the financial forecasts based on current comprehensive AMPs with reasoned supporting assumptions?		
3.5 (d) Are the financial forecasts based on current comprehensive advanced AMPs with detailed supporting assumptions and high confidence in accuracy?		
3.6 (a) Does the agency operate an accounting system?		
3.6 (b) Are the annual accounts finalised within the first quarter of the following year?		
3.6 (c) Are the accounts audited annually?		
3.6 (d) Are the accounts published annually?		

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.

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

4.3 (b) Does the agency produce annual prioritised maintenance and development plans?		
4.3 (c) Does the agency provide prioritised medium term (3-5 year) maintenance plans?		
4.3 (d) Does the agency provide prioritised long term (> 5 year) maintenance plans?		
4.4 (a) Does the agency keep records of maintenance and development work activities, including on feeder roads?		
4.4 (b) Is maintenance and development planned and prioritised according to asset condition?		
4.4 (c) Is maintenance and development prioritised using a cost benefit approach?		
4.4 (d) Is maintenance and development expenditure prioritised using techniques which consider economic and social benefit?		
4.5 (a) Does the agency keep a record of maintenance / unfunded works backlog, including on feeder roads?		
4.5 (b) Does the agency have a strategy to reduce maintenance backlog based on a percentage of the available development budget?		
4.5 (c) Does the agency prioritise the reduction of maintenance backlog using an economic analysis?		
4.5 (d) Does the agency prioritise the reduction of maintenance backlog using risk management techniques?		
4.6 (a) Does the agency carry out basic demand (traffic) forecasting, including on feeder roads?		
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)?		
4.6 (c) Is traffic demand forecast based on mathematical analysis of historical trends?		
4.6 (d) Are primary economic factors used when forecasting demand?		
4.7 (a) Does the agency schedule capital projects using staff judgement, taking into consideration government policy and political drivers?		
4.7 (b) Are projects identified using input from operational staff, estimates of service lives, traffic demand modelling and accident analysis?		
4.7 (c) Are major capital projects for the next 10 years identified and prioritised taking into account socio-political-economic requirements?		

4.7 (d) Does the agency use advanced formalised socio- economic-political decision making techniques to identify major capital expenditure?		

Building Block 5: Technical

Key objective: Identification and ddesription 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.

QUESTION	YES/NO	JUSTIFICATION/COMMENT
5.1 (a) Does the agency have a road referencing system based on routes and nodes between centres of population for feeder roads?		
5.1 (b) Is the road referencing system based on road sections (< 5 km) with homogeneous characteristics?		
5.1 (c) Is the road referencing system based on sub-sections (homogenous sections of 200 m lengths)?		
5.1 (d) Is the road referencing system GIS based?		
5.2 (a) Does the agency have an item inventory recording basic road surface types (earth, gravel or sealed)?		
5.2 (b) Does the agency undertake an inventory of all principal assets (carriageway, shoulders, bridges, culverts, side drains)?		
5.2 (c) Does the inventory include the service lives of all principal assets?		
5.2 (d) Does the agency have deterioration models for all principal assets?		
5.3 (a) Is the road inventory based on broad assumptions or incomplete data?		
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?		
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?		
5.3 (d) Is there an established system of systematic and documented data collection for all principal assets on a sub-section basis?		

5.4 (a) Does the agency carry out annual visual condition assessment surveys for carriageways, shoulders?		
5.4 (b) Are the visual condition assessments carried out in accordance with well documented, standardised procedures?		
5.4 (c) Does the agency measure gravel roads: gravel loss and corrugation annually, and for sealed roads: roughness and cracking annually and deflection at least every 5 years?		
5.4 (d) Are the results of the condition assessment and other road recorded in a computerised AM system?		
5.5 (a) Does the agency estimate asset utilization (traffic) on its network?		
5.5 (b)Does the agency measure asset utilization (traffic) annually on its major roads?		
5.5 (c) Does the agency project asset utilization across its network from annual measures of utilization of a sampled number of roads.		
5.5 (d) Does the agency assess bottlenecks on its network?		

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.

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

Annex J. Road Inventory and Condition Forms

INVENTORY AND ROAD CONDITION DATA TO BE COLLECTED

Data Item	Units	Reporting Interval
Location Referencing		
• Location referencing (points)		as they occur
• Location referencing (linear)	km + m	
• GPS Centreline coordinates		max 10m
Road Inventory		
Road - General		
• Road Type		when change occurs
• Road Servitude Width	m	
• Cross-Section Width	m	when change occurs
• Pavement Surface Type		when change occurs
• Material Quality		when change occurs
• Pavement Width	m	when change occurs
• Shoulder Type		when change occurs
• Shoulder Width	m	when change occurs
• Side Ditch Type		when change occurs
• Side Ditch Width	m	when change occurs
• Side Ditch Depth	m	when change occurs
Road Furniture		
• Barriers		location
• Signs		location
• Road Markings		location
Cross Drainage Structures		
• Location	Km+m	each
Land Use Type		when change occurs
Roadside Features		location
• Markets		each
• Clinics		each
• Schools, etc		each
Road Geometry		
• Horizontal Alignment	sharp, L or R	when change occurs
• Vertical Alignment	steep, rolling, flat	when change occurs
Vegetation Type		when change occurs
Condition		
Carriageway & Drainage		
• Pavement Roughness	IRI	
• Gravel Loss	degree & extent	5km
• Corrugations	degree & extent	5km
• Potholing	degree & extent	5 km
• Rutting	degree & extent	5 km
• Erosion - Carriageway	degree & extent	5 km
• Erosion – Side Ditches	degree & extent	5 km
Pavement Structure		
• Gravel Loss	degree & extent	
Culverts and Bridges		
• Overall Condition	CI	each
Multi Media		
• ROW Video Logging		
• Digital Images of LRPs		each
• Digital Images of Bridges & Major Structures		each

Road Inventory Data Collection Form

ROAD AGENCY NAME:

PROVINCE: | **DISTRICT:** | **ASSESSOR:** | **DATE:**

ROAD AND SECTION DETAILS:

ROAD NAME:

ROAD NO.:

ROAD START POINT: Km

START POINT COORD: X / Y

TRAFFIC:

1	2	3	4	4
<20	20-50	50-100	100-200	>200

ROAD END POINT: Km

END POINT COORD: X / Y

Section Name:

Section Start Point: Km

Start Point Coords: X / Y

Road Reserve Avg Width: m

Section End Point: Km

End Point Coords: X / Y

INVENTORY DATA:

Vert. Alignment:

Flat	Rolling	Steep

Horizontal Alignment:

S/Curves	Gentl Curves	Straight

Vegetation:

Grass	L/Bush	H/Bush

Pavement Surface Types:

1	2	3	4	5
Earth	Gravel			

Pavement Material Types:

1	2	3	4	5
Clay/Silt	Sandy Clay	Sand	Gravel	Stoney Gravel

Pavement Surface Type & Width:

Chainage: From	To	Type	Width (m)

Pavement Material Type:

Chainage: From	To	Type	Remark

Shoulder Type:

None	Earth	Gravel
1	2	3

Side Drain Type:

None	Flat	V-Drain	Trapez
1	2	3	4

Shoulder Type& Width:

Chainage: From	To	Type	L/R	Width(m)

Side Drain Type, Width, Depth:

Chainage: From	To	Type	Width (m)

Road Furniture:

Chainage	Type	Remark	Chainage	Type	Remark

Roadside Facilities:

Chainage	Type	Remark

AfCAP Africa Community Access Partnership GEM

Bridge Inventory

Road Agency Name:_____ **Province:**_____ **District:**_____**Reported By:** _____ **Date:** _____

Road No :_____ **Road Name:**_____ **Section Name:** _____**Start Km:** _____ **End Km:**_____

Location (Km)	Coordinates		Name	Type (Refer to A below)	Number of Spans	Length (m)	Height (m)	Width (m)	Condition (Refer to B below)	Remarks
	X	Y								

Bridge Types (A)

1 Reinforced Concrete Single Spans
2 Reinforced Concrete Continuous
3 Bailey
4 Steel Truss
5 Composite
6 Arch
7 Timber
8 Other

Bridge Condition (B)

1 Good (no work required)
2 Fair (minor work required)
3 Poor (major work required)
4 Bad (in danger of failure)

AfCAP Africa Community Access Partnership GEM

Culvert Inventory

Road Agency Nme:_____ **Province:**_____ **District:**_____**Reported By:** _____ **Date:** _____

Road No:_____ **Road Name:**_____ **Section Name:** _____**Start Km:** _____ **End Km:**_____

Location (Km)	Coordinates		Type (Refer to A below)	Number of Barrels/Openings	Length (m)	Width/ Dia. (m)	Condition Rating (Refer to B below)	Remarks
	X	Y						

Culvert Types (A)

1. Armco
2. Concrete Pipe
3. Concrete Box
4. Plastic Pipe
5. Steel Pipe
6. Arched Culvert
7. Spillway

Culvert Condition (B)

1. Good (no work required)
2. Fair (minor work required)
3. Poor (major work required)
4. Very Poor (in danger of failure)

AfCAP Africa Community Access Partnership GEM

VISUAL ASSESSMENT: UNPAVED ROADS

ROAD AGENCY:		ROUTE CLASS:	1	2	3	4	5
REGION:		TRAFFIC (AADT):	>20	20-50	50-100	100-200	>200
ROAD NO:		GRADIENT:	Flat		Med		Steep
SEGMENT DETAILS:		TERRAIN:	Flat		Rolling		Mount
FROM:		ROAD TYPE:	Gravel	Earth	Track		
TO:		MOISTURE:	Wet	Moist	Dry		

SEGMENT DIMENSIONS: LENGTH (M) _____ WIDTH (M): _____

MATERIAL INFORMATION/GRAVEL PROPERTIES

	DEGREE						
MATERIAL QUALITY:			1	2	3	4	5
		Problem		Oversize	Clay/Silt	Loose Gravel	Loose Sand
MAXIMUM SIZE:			<13mm	13-25mm	25-50mm	>50mm	
GRADING:			Coarse	Medium	Fine		
ESTIMATED "PI"			Low	Medium	High		
LAYER THICKNESS:		>125mm	100-125mm	50-100mm	25-50mm	<25mm	
EXPOSED SUBGRADE:			None	Isolated	Frequent	Continuous	
SUBGRADE QUALITY:				Good	Moderate	Poor	
		Problem			wet	clay/mud	sand

SURFACE DISTRESS/ENGINEERING ASSESSMENT

		DEGREE					EXTENT				
		MINOR		WARNING		SEVERE	ISOLATED				EXTENSIVE
	O	1	2	3	4	5	1	2	3	4	5
POTHOLES:											
CORRUGATIONS:											
RUTTING:											
LOOSE MATERIAL:											
STONINESS: *FIXED*											
LOOSE											
EROSION: *TRANSVERSE*											
LONGITUDINAL											

FUNCTIONAL ASSESSMENT

			DEGREE				
ROUGHNESS:			1	2	3	4	5
Problem	deformation	potholes	stoniness	rock outcrop	corrugations	rutting	rut/erosion
TRAFFICABILITY/IMPASSABILITY:			1	2	3	4	5
Problem		loose mat	clay	rocky	vegetation	steep	drainage
SAFETY:			1	2	3	4	5
Problem			usable width	dust	skid resist	slipperiness	drainage
DRAINAGE: *ON THE ROAD*			1	2	3	4	5
Problem				windrows	rutting	road shape	road level
DRAINAGE: *SIDE OF THE ROAD*			1	2	3	4	5
Problem				culvert inlets	side drains	mitre drains	road level

SUMMARY

OVERALL PAVEMENT CONDITION:	1	2	3	4	5

COMMENTS:

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Structures Condition Survey Form

ROAD AGENCY NAME	STRUCTURE TYPE	NO.
	BRIDGE	
PROVINCE	**DISTRICT**	

LOCATION SKETCH

INSPECTION INFORMATION

Inspection Type:	Inspector	Firm	Date (dd/mm/yyyy)

GPS COORDINATES

Start			End		

LOCATION DETAILS

Road No.	Road Name	Chainage (Km)	Feature Crossed	Feature Name

STRUCTURE INFORMATION

No. of Spans	Bridge Type	Overall Length(r	Overall Width(m)	Orientation

INSPECTION RATINGS

INSPECTION ITEM	D	E	R	INSPECTION ITEM	D	E	R	INSPECTION ITEM	D	E	R
1. Approach Embankment				5. Abutment Foundations				9. Superstructure Drainage			
2. Guardrail				6. Abutments				10. Kerbs/ Sidewalks			
3. Waterway				7. Wing/Retaining walls				11. Parapet			
4. Appr.Emb. Prot.Works				8. Surfacing				21. Miscellaneous Items			

SUPPORTS

Pier No.	12. Pier Protection Works			13. Pier Foundation			14. Piers & Columns			15. Bearings			16 Support Drainage			17 Expansion Joints		
	D	E	R	D	E	R	D	E	R	D	E	R	D	E	R	D	E	R

SPANS

Span No.	18 Longitudinal Members			19 Transverse Members			20 Decks and Slabs		
	D	E	R	D	E	R	D	E	R

ACTION REQUIRED

Item	Position	Activity	Qty	Unit	U	MS	Remarks	MF mths	Photos

Inspector's overall assessment of structure condition and further comments:

Structure Susceptible to Overtopping ? Y/

Further Inspection Needed? Y/N

If **Y**, indicate special requirements with an **X** :

None	6m ladder	Bush cutting
Better weather	UBIU - Under Bridge Inspection	

D - DEGREE							E - EXTENT				R - RELEVANCY				U - URGENCY						
N/A	UA Insp	None	Minor	Fair	Poor	Severe	Local	>Local	<Gnl	General	Min	Moderate	Major	Critical	Record	Monitor	Routine	<10 yrs	< 5 yrs	ASAP	
X	U	0	1	2	3	4	1	2	3	4	1	2	3	4	R	0	1	2	3	4	

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