



AfCAP
Africa Community Access Partnership



Economic Growth through Effective Road Asset Management

Mobilisation Report for Implementation
Phase



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Project No. 10636A GEN2018A

31 October 2016



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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 were carried out included the project launch meeting in Pretoria on 6th and 7th July and initial visits to the project areas by the advisory team in July, August and September. A short period of inactivity followed the country visits as contract arrangements for the Implementation Phase were concluded with Civil Design Solutions.

Project activities recommenced in October 2016 with detailed preparations for the Project Implementation Team meeting to be held on the Western Cape in November, participation in the ARMFA Annual Assembly in November, and further country visits.

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.

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 |
| IAMMM | Infrastructure Asset Management Manual |
| ILO | International Labour Organization |
| IQL | Information Quality Level |
| KLK | 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 |
| RI | Roughton International |
| 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 |

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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). Cardno has entered a contract with Civil Design Solutions (CDS) of Mauritius to provide consultancy services for the delivery of a regional research project on improved management of rural roads.

The project is known as ‘Economic Growth through Effective Road Asset Management – GEM’ and will initially be implemented in sub-Saharan 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) could 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 and the “Implementation Report for the Mobilisation Phase” dated 22nd September 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-Saharan 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 is being provided through demand-led technical assistance funded by UK Aid through AFCAP.

1.5 Purpose of this Report

This report covers re-mobilisation activities carried out in October 2016 following the conclusion of a contract agreement between Cardno Emerging Markets and Civil Design Solutions. The report also sets out the planned activities for the next phase of the project implementation.

Annex A includes a report on country visits by the Road Condition Monitoring Expert. Annex B includes the PowerPoint presentation which will be used by the Team Leader at the ARMFA meeting in November.

2 Progress Report

2.1 Advisory Team Activities

The following activities have been carried out since the start of the implementation phase in July 2016:

- Project Launch Meeting in Pretoria on 6th and 7th July 2016 (for details see the Inception Report)
- Finalisation of the Data Collection Instruments as follows (see the Inception Report for full details):
 - Self- Assessment Questionnaire
 - Road Inventory and Condition Forms
 - Social and Economic Indicators
- Preparation of the Project Information Leaflet (see the Inception Report)
- Initial visit to Zambia, Uganda and Sierra Leone by the Team Leader and Maintenance Expert between 17th and 28th July 2016 (for the outcome of the visits see the Inception Report)
- Visit to the project areas by the Road Condition Monitoring Expert from 15th August to 9th September 2016 (see Annex A).
- Conclusion of sub-contract agreements between CDS and their sub-consultants.
- Preparation for a presentation by the Team Leader at the ARMFA Annual Assembly meeting to be held in Abidjan, Ivory Coast, from 7th to 10th November 2016 (see Annex B).
- Preparations for the first Project Implementation Team meeting to be held in Caledon, Western Cape, from 15th to 17th November 2016.
- Preparations for a visit by the Road Maintenance Expert to Sierra Leone from 29th October to 2nd November.
- Preparations for a visit to Zambia and Uganda by the Road Maintenance Expert and the Rural Transport Economist from 6th to 11th November 2016.

2.2 Participating Country Activities

2.2.1 Action Plans

Action plans for Uganda, Zambia and Sierra Leone were developed during the initial visit to the three countries in July 2016. The action plans were refined and updated and updated following the visit by the Road Monitoring Expert in August/September (see Annex B).

The countries are now proceeding with the collection of the baseline data, which they will present at the PIT meeting. The most recent progress report is included below.

2.2.2 Uganda

Uganda has had difficulty mobilising resources at the district level for the data collection on the part of the rural road network that is under the responsibility of the district council

(Kamuli District). Under the institutional set-up for roads in Uganda the national roads authority (UNRA) has no jurisdiction over local authorities.

Progress in Uganda is summarised in the table below.

Table 2-1: Progress in Uganda¹

| No | Action | Responsibility | Current Status | Revised Completion Timing |
|------|---|---|--|---------------------------|
| 1 | Prepare road and culvert inventories for UNRA road network | UNRA | Road and culvert inventories for last year already prepared. | 30 November 2016 |
| 2 | Prepare road and culvert inventories for Kamuli district road network | Kamuli District Council | Still to commence | Unknown |
| 3 | Prepare a map of the road network. Overlay road map on satellite map. Print A0 and display at District Office | UNRA with Makerere University and MoWT | In progress. MoWT unable to participate in the exercise. Road network map prepared and only awaiting to be printed on A0 paper and displayed at Project Office | 14 October 2016 |
| 4 | Complete UNRA self-assessment questionnaire | UNRA | Soft copy submitted | Completed |
| 5 | Complete District self-assessment questionnaire | Kamuli District Engineer | Copies to be sent to service provider | Unknown |
| 6 | Complete Condition Assessment of project network based on existing data | UNRA Jinja Station Manager | Road condition data on 80 km collected. | 30 November 2016 |
| 7 | Complete Condition Assessment of project network based on existing data | Kamuli District Engineer in liaison with MoWT | Yet to commence, planning meeting to be held after training. MoWT unable to participate in the exercise. | Unknown |
| 8(a) | Identify 10 market centers and plot on road map | UNRA | Centres already independently identified by UNRA and plotted on the road map | Completed |
| 8(b) | Identify 10 market centers and plot on road map | Kamuli District | Yet to commence | Unknown |
| 9(a) | Complete social and economic data form | UNRA | Yet to commence | 30 February 2017 |
| 9(b) | Complete social and economic data form | Kamuli District Engineer | Yet to commence | Unknown |

¹ Source: AfCAP Coordinator for Uganda, 7th October 2016.

2.2.3 Zambia

The progress by Zambia in collecting the baseline data is summarised in the table below. There are no particular areas of concern in Zambia.

Table 2-2: Progress in Zambia²

| Item No. | Action | Responsibility | Update |
|----------|---|---|--|
| 1 | Confirm the name of the Zambia GEM Project Officer. | RDA | Done. Engineer Presley Chilonda was appointed as GEM Project Officer |
| 2 | Provide a copy of the RDA delegated responsibility to the District Councils. | RDA | The delegation is in the roads Act. Copy of the act is available for reference |
| 3 | Prepare road and culvert inventories for the project network. | RDA Regional Office in liaison with District Engineer | Inventory survey was conducted between 26 th and 30 th September 2016. Approximately 351km of roads were surveyed. The survey team is currently putting the data in order. |
| 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 | A map of Chongwe showing all gazetted roads was prepared. Following the inventory survey conducted, a more defined project map will be prepared by first week of November 2016 |
| 5 | Complete the RDA self-assessment questionnaire. | RDA Regional Office | Questionnaire with responses was received and is currently under review. To be submitted by first week of November 2016 |
| 6 | Complete the District self-assessment questionnaire. | District Engineer | Questionnaire with responses was received and is currently under review. To be submitted by first week of November 2016 |
| 7 | Complete the condition assessment forms for the project network based on existing data. | RDA Regional Office | Condition survey was conducted between 26 th and 30 th September 2016. Approximately 351km of roads were surveyed. The survey team is currently putting the data in order. |
| 8 | Identify 10 market centres for the social and economic study and plot their locations on the project map. | District Council | 10 market centres have been identified and their locations will be plotted on the project after it is finalised |
| 9 | Complete the social and economic data collection form. | District Council | Questionnaire with responses was received and is currently under review. To be submitted by first week of November 2016 |

² Source: AfCAP Coordinator for Zambia, 11th October 2016.

2.2.4 Sierra Leone

Sierra Leone has not submitted a summary of progress against the action list. However, the Roads Authority has submitted a completed self-assessment questionnaire. The responses in the questionnaire are being discussed between the SLRA and the Road Maintenance Expert on his current visit to Sierra Leone. Comments on the responses have also been provided by the Asset Management Expert from the University of Birmingham, who is assisting with the analysis and presentation of the results. It is evident that changes are required to the wording of some of the questions.

3 Work Plan

3.1 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 is expected to be concluded in November 2016 with the submission of the Baseline Study Report.

3.2 Growth Phase (24 months)

The growth phase of the project 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 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.

3.3 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.

3.4 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.
- A Mobilisation report – following the contracting of Civil Design Solutions to provide the technical assistance.
- 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.

3.5 Workplan and Inputs

The updated indicative workplan and time inputs by each member of the technical assistance team are shown in Figure 3.1. This is an updated version of the workplan submitted with the Inception Report. It includes activities from the commencement of CDS management of the project in September 2016.

Economic Growth through Effective Road Asset Management – Mobilisation Report for Implementation Phase

| Activity | 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 |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Planning and remobilisation | ■ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Team meetings | | ■ | | | | | ■ | | | | | | | | | | | | | ■ | | | | | | | |
| ARMFA Annual General Meeting | | | ■ | | | | | | | | | | | | ■ | | | | | | | | | | | | ■ |
| Baseline data collection and analysis | ■ | ■ | ■ | | | | | | | | | ■ | ■ | | | | | | | | | | | ■ | ■ | | |
| Self assessments of performance | ■ | ■ | ■ | | | | | | | | | | ■ | | | | | | | | | | | | | ■ | |
| PIT Meetings | | | ■ | | | | | | | | | | | ■ | | | | | | | | | | | | ■ | |
| Technical assistance inputs | | ■ | ■ | | | ■ | | | | ■ | | | ■ | | | | | | ■ | | | | ■ | | | ■ | |
| Dissemination workshop (combined with PIT) | | | | | | | | | | | | | | | | | | | | | | | | | | ■ | |
| Mobilisation Report | | ■ | | | | | | | | | | | | | | | | | | | | | | | | ■ | |
| Baseline/Quarterly Reports | | | ■ | | | ■ | | | ■ | | | ■ | | ■ | | | | ■ | | ■ | | ■ | | ■ | | | |
| Final Report | | | | | | | | | | | | | | | | | | | | | | | | | | | ■ |

Total Inputs

| Expert | Estimated time inputs (days) | | | | | | | | | | | | | | | | | | | | | | | | | | | Total | |
|---|------------------------------|---|----|---|---|----|---|---|---|----|---|---|----|---|---|---|---|----|---|---|---|----|---|---|---|----|---|---------------|-------------|
| Team Leader R Geddes | 2 | 4 | 10 | 2 | 2 | 2 | 4 | 2 | 2 | 14 | 2 | 2 | 2 | 8 | 5 | 2 | 2 | 2 | 4 | 2 | 2 | 14 | 2 | 2 | 2 | 8 | 7 | 112 | |
| Road Maintenance Expert K Gongera | | 3 | 16 | 2 | 2 | 14 | 2 | 2 | 2 | 14 | 2 | 2 | 14 | 6 | 2 | 2 | 2 | 14 | 2 | 2 | 2 | 14 | 2 | 2 | 1 | 14 | 2 | 142 | |
| Road Condition Monitoring Expert C Bopoto | | 3 | 9 | 2 | 2 | 14 | 2 | 1 | 1 | 1 | 1 | 2 | 14 | 6 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 14 | 1 | 2 | 1 | 8 | 2 | 96 | |
| Rural Transport Economist C Lema | | 3 | 12 | 2 | 2 | 2 | 2 | | 2 | 12 | | 2 | | 6 | 2 | | | 2 | 2 | | 2 | 12 | 1 | 1 | 1 | 8 | 2 | 78 | |
| Institutional and Financing Expert M Pinard | | 2 | 5 | | | 1 | 2 | | 1 | | | 1 | | 5 | 1 | | | 1 | 2 | | 1 | | | 1 | | 5 | 2 | 30 | |
| Other Technical Experts | | | 4 | | | 12 | | | | | | | | 5 | | | | 12 | | | | | | | | 5 | 2 | 40 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | Days | 498 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | Months | 22.6 |

Figure 3.1: Programme for Implementation Phase

Annex A. Visit Report by Road Condition Monitoring Expert

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 Road Condition Monitoring Expert visited the project countries in the period mid-August to mid-September 2016.

The purpose of the visits was to assess existing road inventories and condition data collection systems and carry out training sessions to introduce the recommended tools for the same.

It was observed that road inventory and condition data collection systems existed in the project country for main roads with the rural or district roads having been left out. However, the systems in place for higher order roads were not being effectively utilised due to shortage of funding and expertise. Rudimentary systems were being applied for the rural roads and there will be noticeable improvement following application of the simplified and structured system developed under the project.

Fruitful training sessions were undertaken in all countries with participants drawn from road agencies and the districts. In general, significant political support for the project is evident and all project countries were now geared towards completing collection of inventory and condition data by the end of 2016 for the project roads.

Key Words

Asset Management, Rural Roads, Inventory, Condition Survey, IRI

Acronyms, Units and Currencies

| | |
|---------|---|
| \$ | United States Dollars |
| AFCAP | Africa Community Access Partnership |
| AM | Asset Management |
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| DFID | Department for Further International Development |
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| GDP | Gross Domestic Product |
| GPS | Global positioning system |
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| ILO | International Labour Organization |
| IQL | Information Quality Level |
| IRI | International Roughness Index |
| LVR | Low Volume Road |
| MLG | Ministry of Local Government |
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| UKAid | United Kingdom Aid (Department for International Development, UK) |
| UoB | University of Birmingham |
| UNRA | Uganda National Road Authority |

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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). Cardno has signed a contract with Roughton International Limited (RIL) of UK to provide consultancy services for the delivery of a regional research project on improved management of rural roads.

The project is known as ‘Economic Growth through Effective Road Asset Management – GEM’ and will initially be implemented in sub-Saharan 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.

1.2 Purpose of the Project

The purpose of the project is to achieve economic and social benefits for local communities as a result of improved performance in road asset management.

The ultimate beneficiaries of the project are rural communities in sub-Saharan Africa.

1.3 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 sub-national 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 Purpose of this Report

This report covers the initial training sessions undertaken in the project countries by Charles T. Bopoto (Road Condition Monitoring Expert). The visits to the project countries were undertaken over the following periods:

- Zambia - 15th to 19th August 2016,
- Uganda – 19th to 23rd August 2016,
- Sierra Leone - 5th to 9th September 2016.

Details of the itineraries of the visits and the persons met are given in Annex A and Annex B respectively

The objectives set for the visits and training sessions were as follows:

- 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, and
- Agree on future condition survey plans/timing.

2 Assessment of Existing Systems

2.1 Approach

One of the objectives of the visit by the expert was to assess the status of the existing asset management tools held by the road agencies participating in the project.

General discussion was held with the road agencies on the systems currently in place for higher level roads. For the project roads, the assessment was undertaken again through discussions with responsible authorities as well as by making observations guided by Block 5 of the asset management self-assessment questionnaire tool.

The following sub-sections summarise the findings for project roads and includes general pointers to higher level roads systems and procedures.

2.2 Findings

2.2.1 Zambia

| Assessment of Existing Systems against GEM Building Block 5: Technical | |
|--|--|
| Aspect | Remarks |
| Road referencing system | A local simple chainage referencing system exists for those district roads that were part of the term maintenance contracts. There is no referencing system in place for the lower order project roads, these roads are known by name only and the approximate lengths and an indication of surface type. |
| Road Inventory | For all project roads there is no detailed and/or structured inventory of the road asset elements. |
| Data Quality | No assessment could be made of road inventory data as this has not been collected over the years. |
| Annual Condition Surveys | Subjective road inspections are undertaken of roads on an annual basis as input into requests for funding from the Road Fund. |
| Asset Utilization | On feeder roads managed by both RDA and Chongwe District asset utilisation is not measured or assessed. There are not traffic counts undertaken. |
| Identification of Bottlenecks | During surveys to prepare proposals to RMFA points along the road seen as impassable or presenting difficulties are identified and earmarked for spot improvement works. |

2.2.2 Uganda

| Assessment of Existing Systems against GEM Building Block 5: Technical | |
|---|--|
| Aspect | Remarks |
| Road referencing system | <p>A local referencing system exists for those district roads that are managed by UNRA. The system defines nodes and links on the network with clear naming and numbering.</p> <p>There is no referencing system in place for the lower order project roads that are currently managed by Kamuli district, these roads are known by name only and the approximate lengths and an indication of surface type.</p> <p>These roads would benefit from adopting the same reference nomenclature as the UNRA roads.</p> |
| Road Inventory | <p>For all project roads there is no detailed and/or structured inventory of the road asset elements.</p> <p>However, a database system exists in Excel and Access format for road condition and bridges and culverts respectively for UNRA roads.</p> <p>This system can easily be extended to the project roads in particular and district roads.</p> |
| Data Quality | <p>No assessment could be made of road inventory data as this has not been collected over the years.</p> <p>The project roads were still to be inventoried.</p> |
| Annual Condition Surveys | <p>Whilst a clear manual is available for condition survey of unpaved roads (published by UNRA), this is not being employed at UNRA station level or by the district.</p> <p>Subjective road inspections are undertaken of roads on an annual basis as input into requests for funding from the Road Fund.</p> |
| Asset Utilization | <p>On district roads managed by both UNRA and Kamuli District asset utilisation is not measured or assessed. There are no traffic counts undertaken.</p> |
| Identification of Bottlenecks | <p>During surveys to prepare proposals to RMFA points along the road seen as impassable or presenting difficulties are identified and earmarked for spot improvement works.</p> |

2.2.3 Sierra Leone

| Assessment of Existing Systems against GEM Building Block 5: Technical | |
|--|--|
| Aspect | Remarks |
| Road referencing system | There is no referencing system in place for the project roads, these roads are known by name only and the approximate lengths and an indication of surface type. |
| Road Inventory | For all project roads there is no detailed and/or structured inventory of the road asset elements. |
| Data Quality | No assessment could be made of road inventory data as this has not been collected over the years. Inventory data for project roads was still to be collected. |
| Annual Condition Surveys | Subjective road inspections are undertaken of roads on an annual basis as input into requests for funding from the Road Fund. |
| Asset Utilization | On feeder roads managed by both SLRA and Tonkolili District asset utilisation is not measured or assessed. There are no traffic counts undertaken. |
| Identification of Bottlenecks | Points along roads reported as impassable or presenting difficulties are identified and earmarked for spot improvement works. |

3 Discussions on Proposed Tools

3.1 General

Before commencement of the training in the field, a sit-down training session was held where-in discussions centred on the proposed forms and guidelines that would be used to collect inventory information as well as undertake the road condition surveys.

3.2 Forms

The forms were presented by the expert followed by explanation of how they would be applied. There was general discussion on the forms and method aimed at ensuring a good level of understanding before going into the field.

The table overleaf summarises the forms presented and the changes/modifications suggested by the engineers and technicians.

The forms are derived from the system recommended in TMH9 and TMH19 for road condition surveys and bridge inspections respectively.

The forms are included as Annex C.

| Inventory and Road Condition Survey Forms | | | |
|---|-------------------------------|---|---|
| # | Form Name | Purpose and Description | Discussions Outcome |
| 1 | Road Inventory Form | Collection of road attributes | Modify query for drain type, road furniture to add <i>From/To</i> aspect. |
| 2 | Road Condition Survey Form | Recording condition of roads by segment | Change form to be more along the format in TMH9. S. Leone proposed the following scale to rate Roughness – defined the following ratings by speed (km/r): < 20 -- 5 20-30 -- 4 30-40 – 3 40-60 – 2 >60 – 1 Agreed that segment length for network level survey to be 5kms. |
| 3 | Culvert Inventory Form | Recording attributes of culverts | Form acceptable. |
| 4 | Culvert Condition Survey Form | Recording condition of culverts by element | Form acceptable. |
| 5 | Bridges Inventory Form | Recording attributes of bridges | Add Bridge Number column. |
| 6 | Bridges Condition Survey Form | Recording of condition of bridge by assessing each bridge element | Zambia – create a form for steel structures. |
| | All forms | | Modify header information to suit preference of district. |

3.3 Guidelines

The participants to the training were given a set of the following guidelines for use in applying the forms mentioned above:

- TMH 9 – Manual for Visual Assessment of Road Pavements (Part A – General and Part E – Unpaved Roads)
- TMH19 – Manual for the Visual Assessment of Road Structures.

The expert guided the participants through the application of the manuals before undertaking fieldwork.

It was acknowledged that the training time was extremely limited and it was essential that the participants took time to study the guidelines in their own time in detail.

3.4 GPS Receiver/Cellphone App

The Android/iOS app 'RoadLab.Pro' which uses accelerometers and GPS to autonomously measure and evaluate road roughness on IRI scale (International Roughness Index) was introduced to the teams in each project country.

The app, which is obtained for free on the internet, continuously records location using the phone's GPS receiver. The app also includes a feature for tagging important features on the road, this was applied to record coordinates and visual images of road inventory elements.

The data collected is then exported directly to a computer or uploaded on the web via Dropbox and thereafter be ready for collation and analysis. In addition, a *kml* shape-file is exported by the app which immediately enables the alignment of the road to be viewed in Google Maps or other compatible mapping software.

Participants to the training were guided in the downloading, installation and utilisation of the app. The facility to tag inventory items and records coordinates as well as take photographs was found very useful.

Details of the app are given in Annex D.

4 Field Training

At least three roads were selected for the field training, the selection being made to ensure most elements of the road inventory would be encountered.

The participants congregated at the beginning of the first road selected and at this point the purpose of the exercise was re-visited. A reference system was defined and all equipment set in modes to commence data collection. This included setting odometers to zero and switching on of all associated equipment.

Each form was filled jointly by all participants in the first instance and then assigned to one member of the team. After traversing a segment, the participants gathered in one place and each member would fill in their form whilst under review by other participants.

Discussions were held to ensure uniformity of approach by all members of the team. In the limited time available it was necessary to ensure the critical stages of the process were emphasized.

5 Data Analysis

Due to inadequate time there was no detailed analysis of data that was obtained during the trial field surveys. In addition, insufficient data had been collected as the exercise involved regular stopping and detailed explanation of the various aspects of the surveys.

6 Recommendations from Training Sessions

In summary, the following were the findings made during the visit and training sessions:

- Road inventory and condition monitoring tools were available in national road agencies, albeit not utilised fully,
- Some of the tools mentioned above can be suitable for application on the project roads by districts,
- District roads, in all the three countries, had been left out of major studies and data collection exercises undertaken by consultants on behalf of road agencies,
- Staffing shortages at district level were hampering proper management of road provision and maintenance,
- Resources to undertake most task are limited especially at district level, however, there is great commitment to make the project a success,
- A palpable spirit of cooperation exists between main road agencies and districts in all countries.

In light of the above it is recommended that:

- Certain components of road management systems currently held by road agencies be assessed for application on the project roads. This includes mainly the computerised data bases for storing inventory data,
- Further training be undertaken in storage and analysis of condition data,
- Advice be given to project countries on utilisation of inventory and condition data in bidding for road maintenance funding as well as planning maintenance activities on the network,
- Training will also be required in valuation of assets and monitoring trends in asset value.

7 Status Report of Country GEM Action Plans

During the previous country visits by the Team Leader in July 2016 action plans were developed to guide all three project countries in the initial phase of data collection.

Information was collected on the current status of the plans and this is reported in country specific tables overleaf.

On the whole, the three project countries were still to commence collection of the inventory data as well as undertake the road condition surveys, thus being some weeks behind progress.

However, the project roads had been identified and were being finalised. The required 10 rural market centres for collection of social and economic data had been largely agreed upon.

7.1 Zambia

| | Action | Responsibility | Status at time of Visit | Revised Completion Timing |
|---|--|---|---|---------------------------|
| 1 | Confirm the name of the Zambia GEM Project Officer. | RDA | Eng Chilonda confirmed as new Project Officer | |
| 2 | Provide a copy of the RDA delegated responsibility to the District Councils. | RDA | Not done | |
| 3 | Prepare road and culvert inventories for the project network. | RDA Regional Office in liaison with District Engineer | Not done | 30 Sept |
| 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 | Not done | 30 Sept |
| 5 | Complete the RDA self-assessment questionnaire. | RDA Regional Office | Not complete | End of Aug |
| 6 | Complete the District self-assessment questionnaire | District Engineer | Not complete | End of Aug |
| 7 | Complete the condition assessment forms for the project network based on existing data. | RDA Regional Office | Not done | 30 Sept |
| 8 | Identify 10 market centres for the social and economic study and plot their locations on the project map. | District Council | Done | |
| 9 | Complete the social and economic data collection form. | District Council | Not done | 30 Sept |

7.2 Uganda

| | Action | Responsibility | Status at Time of Visit | Revised Completion Timing |
|---|--|--|---|---------------------------|
| 1 | Prepare road and culvert inventories for Kamuli district UNRA road network | UNRA | Still to commence | 30 Sept |
| 2 | Prepare road and culvert inventories for Kamuli district road network | Kamuli District Council | Still to commence | 30 Sept |
| 3 | Prepare a map of the road network Overlay road map on topo map Print A0 and display at District Office | UNRA with Makerere University and MoWT | In progress | 30 Sept |
| 4 | Complete RDA self-assessment questionnaire | UNRA | Completed | To send copies |
| 5 | Complete District self-assessment questionnaire | Kamuli District Engineer | Completed | To send copies |
| 6 | Complete Condition Assessment of project network based on existing data | UNRA Jinja Station Manager and Kamuli District Engineer in liaison with MoWT | Still to commence, planning meeting to be held after training | 30 Sept |
| 7 | Identify 10 market centers and plot on road map | UNRA with Makerere University and MoWT | Centers jointly identified by UNRA and Kamuli District | Complete |
| 8 | Complete social and economic data form | UNRA, Kamuli District Engineer | Not done | 30 Sept |

7.3 Sierra Leone

| # | Action | Responsibility | Status at Time of Visit | Revised Completion Timing |
|---|--|-----------------------------------|--|--|
| 1 | Identify the project road network and prepare road and culvert inventory | SLRA in liaison with the district | List completed during visit | Complete |
| 2 | Prepare a map of the road network Overlay road map on topo map Print A0 and display at District Office | SLRA | Sketch of map prepared, the 1:50000 maps acquired. | Digital map to be prepared after inventory |
| 3 | Complete self-assessment questionnaire | SLRA | Complete, form to be sent by email | Complete |
| 4 | Identify 10 market centers for social and economic study and plot on the project map | SLRA in liaison with the Council | List of centres completed during visit, councillors participated | Complete |
| 5 | Complete social and economic data collection form | SLRA working with the Council | Not commenced | 10 September |
| 6 | Complete the condition assessment forms for the project network (roads and culverts) based on existing data (target date 31 Dec) | SLRA and District Engineer | Not commenced, awaited training | Inventory – 20 October Condition Survey – 31 December |

Annex A: Itinerary

| ZAMBIA | |
|----------------|--|
| Day | Activity |
| Mon. 15 Aug. | Arrival in Lusaka |
| Tue. 16 Aug. | Meetings at RDA Planning Department <ul style="list-style-type: none"> • General introductory meetings • Provide information on current systems • Review of current systems |
| Wed. 17 Aug. | Meeting at RDA Planning Department <ul style="list-style-type: none"> • General discussion of systems Meetings with District Engineer's Office <ul style="list-style-type: none"> • General introductory meetings • Provide information on current systems • Visit sample District roads |
| Thurs. 18 Aug. | Training sessions, introduction to Condition Monitoring Method Road Condition Monitoring on Sample Roads |
| Fri. 19 Aug | Data Analysis and Exit Meetings at District Office Exit Meeting at RDA |
| Sat. 20 Aug | Depart Lusaka |

| UGANDA | |
|---------------|---|
| Day | Activity |
| Sun. 21 Aug. | Arrival in Kampala |
| Mon. 22 Aug. | Meetings at UNRA Planning Department <ul style="list-style-type: none"> • General introductory meetings • Collection of information on current systems • Travel to Jinja, initial visit to project roads |
| Tues 23 Aug | Meetings with District Engineer's Office <ul style="list-style-type: none"> • General introductory meetings • Collection of information on current systems |
| Wed 24 Aug | Training session at Jinja UNRA station Road Inventory and Condition Monitoring on Sample Roads |
| Thur. 25 Aug. | Exit meetings at Jinja and Kampala |
| Fri. 26 Aug | Depart Kampala |

| SIERRA LEONE | |
|---------------------|--|
| Day | Activity |
| Mon. 05 Sept. | Arrival in Freetown |
| Tue. 06 Sept. | Meetings at SLRA Office - Freetown Meetings at SLRA Office - Freetown Meetings with the following: <ul style="list-style-type: none"> • Chief and Deputy Chief Engineer Feeder Roads • PMMP Chief – Mr Jame Fayir • Deputy Director General • Director of Maintenance |
| Wed. 07 Sept. | Meetings at Tonkolili District Office Meetings at Tonkolili District Office Meetings held with the following: <ul style="list-style-type: none"> • Council Chairman • Selected Group of Councillors • District Engineer |
| Thurs. 08 Sept. | Introduction to Condition Monitoring Method, Road Condition Monitoring on Sample Roads Road Inspection, GPS Travel Time and Mobile Phone Roughness Surveys |
| Fri. 09 Sept. | Travel to Freetown and meeting with the Director General Exit Meeting with Deputy Chief Engineer, Feeder Roads |
| Sat. 10 Sept. | Depart Freetown |

Annex B: People Met

Zambia – RDA

| NAME | DEPT | DESIGNATION | EMAIL ADDRESS | MOBILE NUMBER |
|------------------|---------------------|---------------------------|--|---------------|
| Thompson Banda | RDA-HQ | AFCAP Coordinator | tbanda@roads.gov.zm | 0978480785 |
| Dickson Ndhlovu | RDA-HQ | Senior Manager - Planning | dndhlovu200@gmail.com | 0962491894 |
| Presley Chilonda | RDA-HQ | AFCAP Desk Officer | pchilonda@roads.gov.zm | 0978949956 |
| 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 |

Zambia – Meeting at Chongwe District

| NAME | DEPT | DESIGNATION | EMAIL ADDRESS | MOBILE NUMBER |
|------------------|--------------------------|-------------------|--|---------------|
| Mr J.P. Simbeya | Chongwe Council | Council Chairman | | |
| Eng. Peter Banda | Chongwe Council | Director of Works | pebar@yahoo.com | 0977355561 |
| Mrs M. Banda | Planning Department | Planning Director | | |
| J. Chibwe | Chongwe Roads Department | Roads Supervisor | | |

Zambia – Training Session

| NAME | DEPT | DESIGNATION | EMAIL ADDRESS | MOBILE NUMBER |
|------------------|--------------------------|------------------------|--|---------------|
| Presley Chilonda | RDA-HQ | AFCAP Desk Officer | pchilonda@roads.gov.zm | 0978949956 |
| Victor Miti | RDA Lusaka Region | Eng. Planning & Design | vmiti@roads.gov.zm | 0977722365 |
| Peter Banda | Chongwe Council | Director of Works | pebar@yahoo.com | 0977355561 |
| J. Chibwe | Chongwe Roads Department | Roads Supervisor | | |

Uganda – UNRA Head Office

| NAME | DEPT | DESIGNATION | EMAIL ADDRESS | MOBILE NUMBER |
|-----------------|------|--------------------------------|--|---------------|
| Mark Rubarenzya | UNRA | Head, Research and Development | Mark.Rubanrenzya@unra.go.ug | |
| Mugume Rodgers | UNRA | Research Fellow | rodgers.mugume@unra.gov.ug | 256701836373 |
| Various | UNRA | Maintenance Department Staff | | |

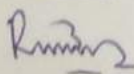







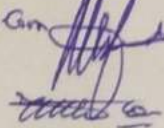
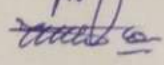
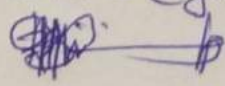
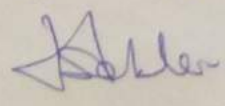
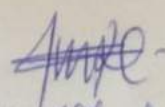
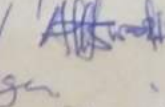
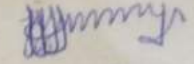

Uganda – Kamuli District Office

| NAME | DEPT | DESIGNATION | EMAIL ADDRESS | MOBILE NUMBER |
|-----------------|-----------------|-------------------------|--|---------------|
| Mugume Rodgers | UNRA | Research Fellow | rodgers.mugume@unra.gov.ug | 256701836373 |
| Mulondo Grace | Kamuli District | Director of Engineering | | |
| Mufumba Daniel | Kamuli District | Assistant Engineer | | |
| Mugeeze Charles | Kamuli District | Roads Inspector | | |
| Doreen Wafula | UNRA | Network Technician | | |
| | | | | |

Jinja Training Session

| NAME | DEPT | DESIGNATION | EMAIL ADDRESS | MOBILE NUMBER |
|--------------|------|-------------|---------------|---------------|
| See overleaf | | | | |

ATTENDANCE OF TRAINING FOR AT-CAP -
GEM PROJECT AT JINJA STATION ON
24th AUGUST 2016

| <u>NAME</u> | <u>POSITION</u> | <u>e-mail</u> | <u>Sign</u> |
|--------------------------|---|-----------------------------|---|
| 1. MUGUME ROBERT | UNRA, R&S | rmugume@unra.go.ug |  |
| 2. ROBERT KAKUZA K. | Phd (Card.) | eng.kakuzak@gmail.com |  |
| 3. Musinguzi Julius T. | EM(NE)UNRA | Julius.Musinguzi@unra.go.ug |  |
| 4. WAKOMBE DWALI | SI-M-JINJA | Dwali.wakombe@unra.go.ug |  |
| 5. BYARUKHANGA ANASTAS | MT-JINJA | byarukat@yahoo.com |  |
| 6. EDOBO ANGVANI COLLINS | M.T-JINJA | collins.edobo@unra.go.ug |  |
| 7. EWOKU DAVID | MTech - JINJA | David.Ewoku@unra.go.ug |  |
| 8. OKELLO JOHN | Inspector of works | okellojohn56@gmail.com |  |
| 9. Mulondo Grace | District Engineer - Kamuli | gmulondo@yahoo.com |  |
| 10. Mugege Charles | Road Insp. Kamuli | - |  |
| 11. MUFUMBA DANIEL | ASS. Engineering officer Kamuli Dist. | mufumbadaniel@gmail.com |  |
| 12. Sebandeke Herbert | Senior Asst Engineer in Charge Roads - Iganga | hsebande@yahoo.com |  |
| 13. MUSAABI PAUL | Road Inspector Iganga | - |  |
| 14. Amswal Sdeh | Deputy Asst Engineer Iganga | amswal@yahoo.com |  |
| 15. Higemyi George | Supr of works Bwende | Higemyigeorge2@gmail.com |  |
| 16. Charles Boboto | ROUGHTON RCM-GEN | charlesboboto@yahoo.co.uk |  |

Sierra Leone – SLRA Head Office






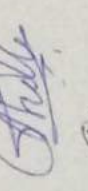


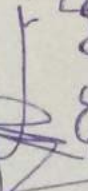

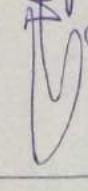

| NAME | ORGANISATION | DESIGNATION |
|-------------------|--------------|--|
| Abdulai A. Kamara | SLRA | Director General |
| Memuna K. Jalloh | SLRA | Deputy Director General |
| Tamba Amara | SLRA | Chief Engineer District Roads |
| Hassan A. Turay | SLRA | Director Admin |
| S. Clembo | SLRA | D. Director Maintenance |
| J. Fayir | SLRA | Chief Engineer, RMMU |
| P. Kome | SLRA | Chief Engineer Projects, Doctorate Student |

Tonkolili District Training Session

| NAME | ORGANISATION | DESIGNATION | EMAIL ADDRESS | MOBILE NUMBER |
|----------------|-------------------------|-------------------|--|---------------|
| Tamba Amara | SLRA | Chief Engineer DD | tmanamara@gmail.com | 076649226 |
| Peter Kome | SLRA | Chief Engineer | Kome1978@hotmail.com | 0766098080 |
| Mohamed Lahai | SLRA/Tonkolili District | District Engineer | Mohamedlahai12@yahoo.com | 076681876 |
| Mohamed Sankoh | Tonkolili District | Roads Supervisor | | |

7/07/16

Attendance list

| No. | Names | ISF Affiliation | Signature | Phone # | Email |
|-----|--------------------|-----------------|---|-------------------------------------|--------------------------|
| 1 | Tamba K. Amava | SLRA |  | 076-649226 | tmannamava2503@gmail.com |
| 2 | Charles T. Boroto | Roughton |  | +25025559845 | charlyboroto@yahoo.co.uk |
| 3 | Sarrah N. Kooma | TDC |  | 077 292 176 | Koomason@gmail.com |
| 4 | Alfred Ben Curamy | TDC |  | 0785681236 | biken2myf@yahoo.com |
| 5 | Emmanuel K. Dudley | TDC |  | 030123797 | |
| 6 | Abdul Aziz Seseny | TDC |  | 077-665-785 | |
| 7 | Foday Y. Kanne | TDC |  | 078-761838 | |
| 8 | Alfred N. Samma | TDC |  | 076-295555 | |
| 9 | Mohamed Labai | SLRA |  | 076-681876 | mohamedlabai@yahoo.com |
| 10 | Husine A Sebyy | TDC |  | 076 969668 076 969668 | husineasebyy@gmail.com |
| 11 | Gbrahim P. Kamars | Media |  | 076-277478 | kamaraibrahim@gmail.com |
| 12 | Piter S. Kome | SLRA |  | 076-608080 kome1979@hotmail.com | |

Annex C: Road Inventory and Condition Survey Forms

INVENTORY AND ROAD CONDITION DATA TO BE COLLECTED

| Data Item | Units | Reporting Interval |
|--|----------------------|--------------------|
| Location Referencing | | |
| <ul style="list-style-type: none"> Location referencing (points) | | as they occur |
| <ul style="list-style-type: none"> Location referencing (linear) | km + m | |
| <ul style="list-style-type: none"> GPS Centreline coordinates | | max 10m |
| Road Inventory | | |
| Road - General | | |
| <ul style="list-style-type: none"> Road Type | | when change occurs |
| <ul style="list-style-type: none"> Road Servitude Width | m | |
| <ul style="list-style-type: none"> Cross-Section Width | m | when change occurs |
| <ul style="list-style-type: none"> Pavement Surface Type | | when change occurs |
| <ul style="list-style-type: none"> Material Quality | | when change occurs |
| <ul style="list-style-type: none"> Pavement Width | m | when change occurs |
| <ul style="list-style-type: none"> Shoulder Type | | when change occurs |
| <ul style="list-style-type: none"> Shoulder Width | m | when change occurs |
| <ul style="list-style-type: none"> Side Ditch Type | | when change occurs |
| <ul style="list-style-type: none"> Side Ditch Width | m | when change occurs |
| <ul style="list-style-type: none"> Side Ditch Depth | m | when change occurs |
| Road Furniture | | |
| <ul style="list-style-type: none"> Barriers | | location |
| <ul style="list-style-type: none"> Signs | | location |
| <ul style="list-style-type: none"> Road Markings | | location |
| Cross Drainage Structures | | |
| <ul style="list-style-type: none"> Location | Km+m | each |
| Land Use Type | | |
| | | when change occurs |
| Roadside Features | | |
| <ul style="list-style-type: none"> Markets | | location |
| <ul style="list-style-type: none"> Clinics | | each |
| <ul style="list-style-type: none"> Schools, etc | | each |
| Road Geometry | | |
| <ul style="list-style-type: none"> Horizontal Alignment | sharp, L or R | when change occurs |
| <ul style="list-style-type: none"> Vertical Alignment | steep, rolling, flat | when change occurs |
| Vegetation Type | | |
| | | when change occurs |
| Condition | | |
| Carriageway & Drainage | | |
| <ul style="list-style-type: none"> Pavement Roughness | IRI | |
| <ul style="list-style-type: none"> Gravel Loss | degree & extent | 5km |
| <ul style="list-style-type: none"> Corrugations | degree & extent | 5km |
| <ul style="list-style-type: none"> Potholing | degree & extent | 5 km |
| <ul style="list-style-type: none"> Rutting | degree & extent | 5 km |
| <ul style="list-style-type: none"> Erosion - Carriageway | degree & extent | 5 km |
| <ul style="list-style-type: none"> Erosion – Side Ditches | degree & extent | 5 km |
| Pavement Structure | | |
| <ul style="list-style-type: none"> Gravel Loss | degree & extent | |
| Culverts and Bridges | | |
| <ul style="list-style-type: none"> Overall Condition | CI | each |
| Multi Media | | |
| <ul style="list-style-type: none"> ROW Video Logging | | |
| <ul style="list-style-type: none"> Digital Images of LRPs | | each |
| <ul style="list-style-type: none"> 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: | <input type="text"/> | TRAFFIC: | 1 | 2 | 3 | 4 | 4 |
| ROAD NO.: | <input type="text"/> | | <20 | 20-50 | 50-100 | 100-200 | >200 |
| ROAD START POINT: | <input type="text"/> Km | ROAD END POINT: | <input type="text"/> Km | | | | |
| START POINT COORD: | X <input type="text"/> Y <input type="text"/> | END POINT COORD: | X <input type="text"/> Y <input type="text"/> | | | | |
| Section Name: | <input type="text"/> | Road Reserve Avg Width: | <input type="text"/> m | | | | |
| Section Start Point: | <input type="text"/> Km | Section End Point: | <input type="text"/> Km | | | | |
| Start Point Coords: | X <input type="text"/> Y <input type="text"/> | End Point Coords: | X <input type="text"/> Y <input type="text"/> | | | | |

INVENTORY DATA:

| | | | | | | | | |
|-------------------------|----------------------|----------------------|------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Vert. Alignment: | | | Horizontal Alignment: | | | Vegetation: | | |
| Flat | Rolling | Steep | S/Curves | Gentl Curves | Straight | Grass | L/Bush | H/Bush |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

Pavement Surface Types:

| | | | | |
|-------|--------|----------------------|----------------------|----------------------|
| 1 | 2 | 3 | 4 | 5 |
| Earth | Gravel | <input type="text"/> | <input type="text"/> | <input type="text"/> |

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) |
|-----------|------|----|------|-----------|
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Pavement Material Type:

| Chainage: | From | To | Type | Remark |
|-----------|------|----|------|--------|
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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) |
|-----------|------|----|------|-----|----------|
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Side Drain Type, Width, Depth:

| Chainage: | From | To | Type | Width (m) |
|-----------|------|----|------|-----------|
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Road Furniture:

| Chainage | Type | Remark | Chainage | Type | Remark |
|----------|------|--------|----------|------|--------|
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Roadside Facilities:

| Chainage | Type | Remark |
|----------|------|--------|
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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 | | | | | | | | |
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- 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)

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 | | | | | | |
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- 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)



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

SURFACE DISTRESS/ENGINEERING ASSESSMENT

| | | | | | | | | | | | |
|----------------------------|--------|-------|---------|--------|---|----------|---|---|-----------|---|---|
| | DEGREE | | | | | EXTENT | | | | | |
| | | MINOR | WARNING | SEVERE | | ISOLATED | | | EXTENSIVE | | |
| | 0 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| POTHOLE: | | | | | | | | | | | |
| CORRUGATIONS: | | | | | | | | | | | |
| RUTTING: | | | | | | | | | | | |
| LOOSE MATERIAL: | | | | | | | | | | | |
| STONINESS: <i>FIXED</i> | | | | | | | | | | | |
| <i>LOOSE</i> | | | | | | | | | | | |
| EROSION: <i>TRANSVERSE</i> | | | | | | | | | | | |
| <i>LONGITUDINAL</i> | | | | | | | | | | | |

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: <i>ON THE ROAD</i> | | 1 | 2 | 3 | 4 | 5 | | |
| | Problem | | windrows | rutting | road shape | road level | | |
| DRAINAGE: <i>SIDE OF THE ROAD</i> | | 1 | 2 | 3 | 4 | 5 | | |
| | Problem | | culvert inlets | side drains | mitre drains | road level | | |

SUMMARY

| | | | | | |
|-----------------------------|---|---|---|---|---|
| OVERALL PAVEMENT CONDITION: | 1 | 2 | 3 | 4 | 5 |
|-----------------------------|---|---|---|---|---|

COMMENTS:

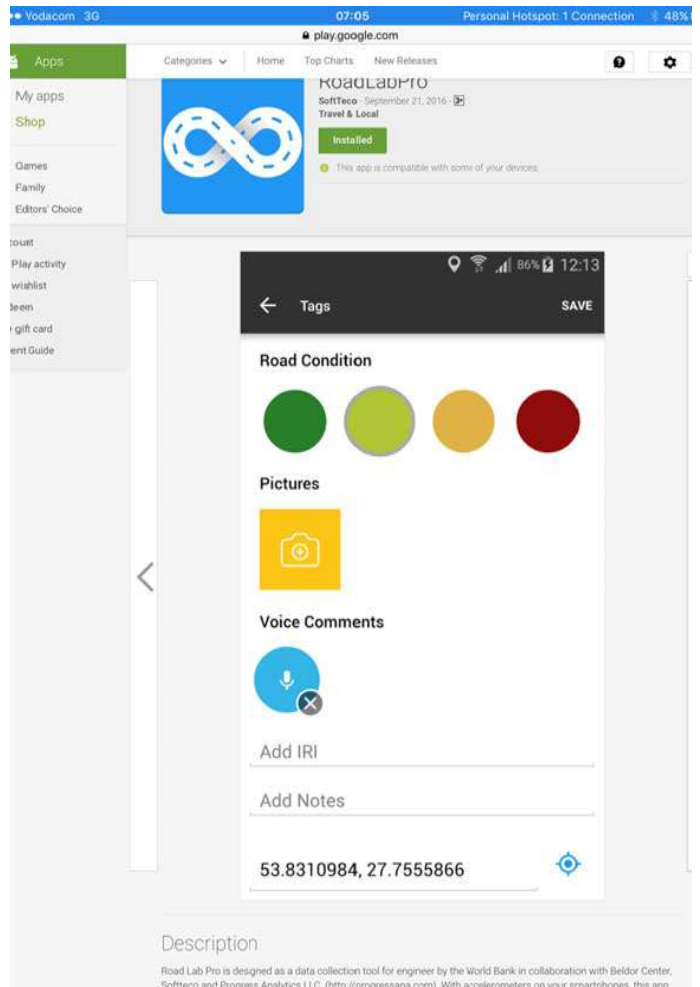
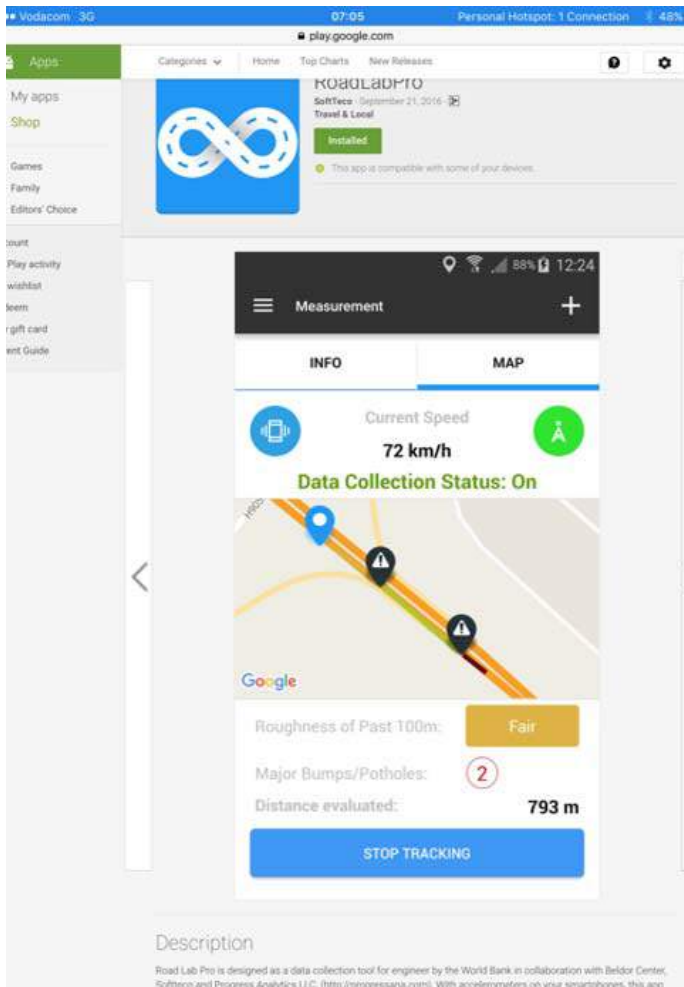
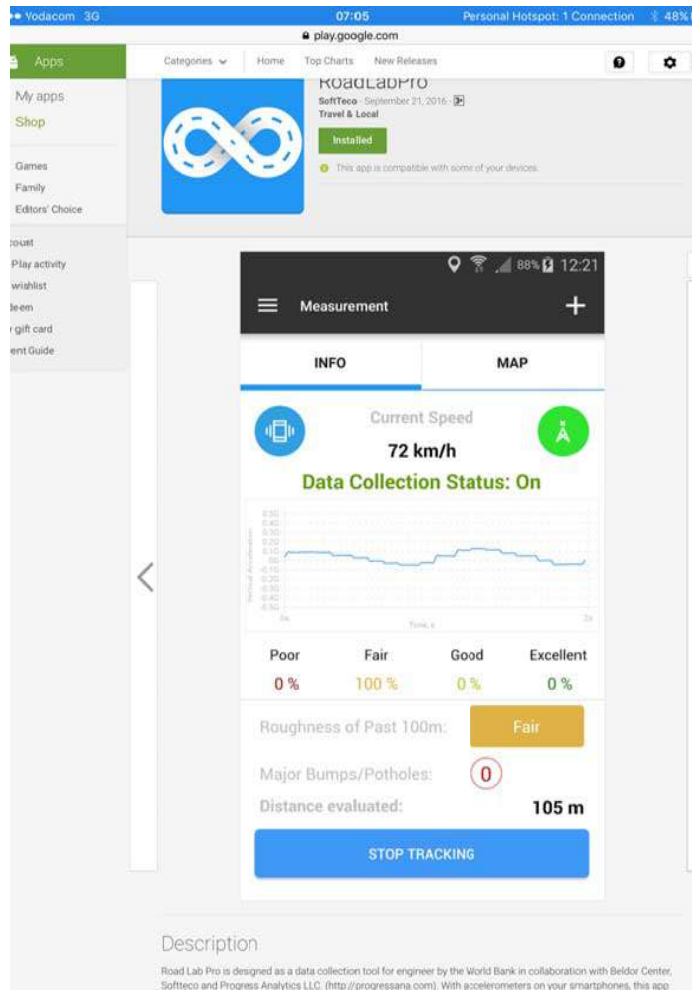
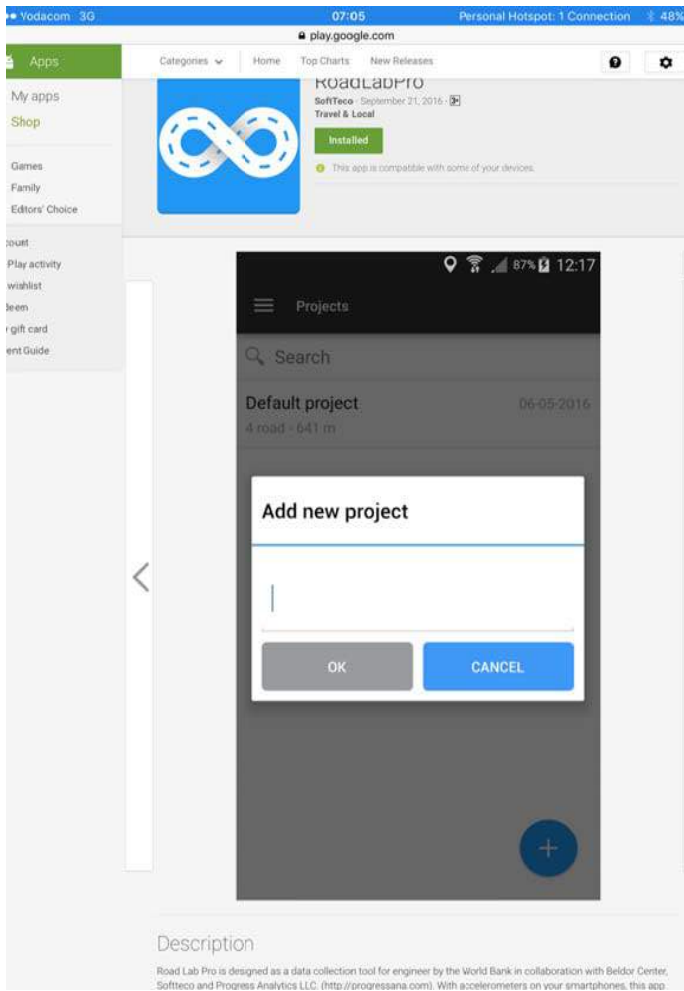
Structures Condition Survey Form

| | | | | | | | | | | | | | | | | | | | | | |
|---|----------|-----------|-----------|----------------|------|-------------------|-------------------|------------------|-------------------|-----------------|----------------------|-----------------|-------|-----------------------|--------------------|----------|---------|---------|---------|------|--|
| ROAD AGENCY NAME | | | | STRUCTURE TYPE | | | | NO. | | | | LOCATION SKETCH | | | | | | | | | |
| | | | | CULVERT | | | | | | | | | | | | | | | | | |
| PROVINCE | | | | DISTRICT | | | | | | | | | | | | | | | | | |
| 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 Openings | | Type | | | | Overall Length(m) | | Overall Width(m) | | | | Orientation | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| INSPECTION RATINGS | | | | | | | | | | | | | | | | | | | | | |
| INSPECTION ITEM | | | | D | | | | E | | | | R | | | | | | | | | |
| 1. Approach Slabs & Cut Off Walls | | | | | | | | | | | | | | | | | | | | | |
| 2. Wing/Retainer Headwalls | | | | | | | | | | | | | | | | | | | | | |
| 3. Scour Protection Works in Waterway | | | | | | | | | | | | | | | | | | | | | |
| 4. Embankments | | | | | | | | | | | | | | | | | | | | | |
| 5. Waterway | | | | | | | | | | | | | | | | | | | | | |
| 6. Roadway Slabs | | | | | | | | | | | | | | | | | | | | | |
| 7. Roadway Joints | | | | | | | | | | | | | | | | | | | | | |
| 8. Guardrails | | | | | | | | | | | | | | | | | | | | | |
| 9. Parapets/ Handrails | | | | | | | | | | | | | | | | | | | | | |
| 14. Miscellaneous | | | | | | | | | | | | | | | | | | | | | |
| INSPECTION ITEM | | 10. Walls | | | | 11. Top Slab | | | | 12. Invert Slab | | | | 13. Cell Displacement | | | | | | | |
| Position | | D | | | | E | | | | R | | | | INSPECTION ITEM | | Position | | | | | |
| Cell | | | | | | | | | | | | | | Cell | | | | | | | |
| Cell | | | | | | | | | | | | | | Cell | | | | | | | |
| Cell | | | | | | | | | | | | | | Cell | | | | | | | |
| Cell | | | | | | | | | | | | | | Cell | | | | | | | |
| ACTION REQUIRED | | | | | | | | | | | | | | | | | | | | | |
| Item | Position | Activity | | | | | | Qty | Unit | U | MS | Remarks | | | | | | MF mths | Photos | | |
| | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | |
| Inspector's overall assessment of structure condition and further comments: | | | | | | | | | | | | | | | | | | | | | |
| Structure Susceptible to Overtopping? Y/N | | | | | | | | | | | | | | | | | | | | | |
| Further Inspection Needed? Y/N | | | | | | | | | | | | | | | | | | | | | |
| 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 | < 5 yrs | < 2 yrs | ASAP | |
| X | U | 0 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | R | 0 | 1 | 2 | 3 | 4 | |

Structures Condition Survey Form

| ROAD AGENCY NAME | | STRUCTURE TYPE | | | | NO. | | | | LOCATION SKETCH | | | | | | | | | | | | | | | | | | | | | | |
|---|---------------------------|----------------|---------------------|------|---------------------|-------------------|------------|-------------------|------|--|-------------------------|---------------|----------------------|-----------------|----------|--------------------------------|---------|--------------|------------------------|------|---|----------------------------|---|---|---|--|--|--|--|--|--|--|
| | | BRIDGE | | | | | | | | <div style="border: 1px solid black; height: 150px; width: 100%;"></div> | | | | | | | | | | | | | | | | | | | | | | |
| PROVINCE | | | | | DISTRICT | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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(m) | | | | Overall Width(m) | | | | Orientation | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| INSPECTION RATINGS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | SPANS | | | | | | | | | | | | | | | | | | | | | |
| Pier No. | 12. Pier Protection Works | | 13. Pier Foundation | | 14. Piers & Columns | | | 15. Bearings | | | 16. Support Drainage | | 17. Expansion Joints | | Span No. | 18. Longitudinal Members | | | 19. Transverse Members | | | 20. Decks and Slabs | | | | | | | | | | |
| | D | E | R | D | E | R | D | E | R | D | E | R | D | E | | R | D | E | R | D | E | R | D | E | R | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| ACTION REQUIRED | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Item | Position | Activity | | | | Qty | Unit | U | MS | Remarks | | | | | MF | Photos | | | | | | | | | | | | | | | | |
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| Inspector's overall assessment of structure condition and further comments: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Structure Susceptible to Overtopping ? Y/N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | |

Annex D: RoadLab.By Cellphone Roughness Measurement App



Yodacom 3G 06:56 Personal Hotspot: 1 Connection 49%

play.google.com

Categories Home Top Charts New Releases

RoadLabPro
 SoftTeco · September 21, 2016 · Travel & Local
 Installed
 This app is compatible with some of your devices.

Description

Road Lab Pro is designed as a data collection tool for engineer by the World Bank in collaboration with Beldor Center, Softteco and Progress Analytics LLC. (<http://progressana.com>). With accelerometers on your smartphones, this app evaluates road conditions, map road networks, detects major road bumps, and reports road safety hazards. You can even upload a picture of potholes, black spots, or road accidents, etc with a simple tag. The app runs on all Android devices, such as Android smartphones or tablets. Please click the link below to download the app. No data plan is required for running this app. All data collected can be emailed to yourself or uploaded to your own Dropbox account when wifi is available. To use the app, the mobile device has to be placed on a stable surface in your vehicle, preferably mounted vertically and tightly to the vehicle windshield.

Yodacom 3G 07:05 Personal Hotspot: 1 Connection 48%

play.google.com

Apps Categories Home Top Charts New Releases

My apps Shop Games Family Editors' Choice

SoftTeco · September 21, 2016 · Travel & Local
 Installed
 This app is compatible with some of your devices.

Description

Road Lab Pro is designed as a data collection tool for engineer by the World Bank in collaboration with Beldor Center, Softteco and Progress Analytics LLC. (<http://progressana.com>). With accelerometers on your smartphones, this app

Annex E: Sample Photographs of Training Sessions





Photo # 07: Participants discussing survey findings - Uganda



Photo # 10: Example of impassability, flooded crossing, Tonkolili, S. Leone



Photo # 08: Damaged culvert entrance, training - Uganda



Photo # 11: Inventory of bridge structure - Tonkolili, S. Leone



Photo # 09: Training participants with Council Chair – Tonkolili, S. Leone



Photo # 12: Mapping of project roads – Tonkolili, S. Leone

Annex B. Team Leader Presentation for ARMFA General Assembly



Economic Growth through Effective Road Asset Management (GEM)

15th ARMFA Annual General Assembly

7th to 10th November 2016

RN Geddes



Introduction to Project



Title of Project:

Economic Growth through Effective Road Asset Management (GEM)


- Rural road networks managed by sub-national road agencies
- First significant attempt by AFCAP to address maintenance of rural roads on a large scale
- Research project – process is as important as the outcomes.

Outline of Presentation:


- Study Team
- Road Maintenance in Africa
- Purpose and Objectives
- Approach
- Methodology
- Vision



Study Team



- ReCAP Infrastructure Research Manager
Les Sampson
- Team Leader:
Rob Geddes
- Institutional and Financing Expert:
Mike Pinard
- Road Maintenance Expert and Trainer:
Kingstone Gongera
- Asset Management Expert:
Michael Burrow
- Road Condition Monitoring Expert:
Charles Bopoto
- Rural Transport Economist:
Camilla Lema
- Short term experts:
Gurmel Ghataora
Gerrie van Zyl
- Field Researchers:
UoB PhD students.



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Road Maintenance in Africa



- More funding for maintenance and more predictable (road funds)
- Local government administrations have more autonomy
- Increasing capacity of the private sector.









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Road Maintenance in Africa - Strategy



- Few examples of sustainable management systems for rural roads SS Africa.
- More attention to construction of roads than maintenance.
- Maintenance systems focus more on preparing and implementing annual work programme than long term strategic plans.
- Lack of a culture for maintenance.
- Governments unsure whether to decentralize rural road maintenance.



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Road Maintenance in Africa - Funding



- Funding for maintenance has improved - road funds are broadening the net.
- Priority to maintenance of national trunk road networks.
- Lack of confidence in the long term security of road funds: road agencies unable to let multi-year maintenance contracts.



e-toll

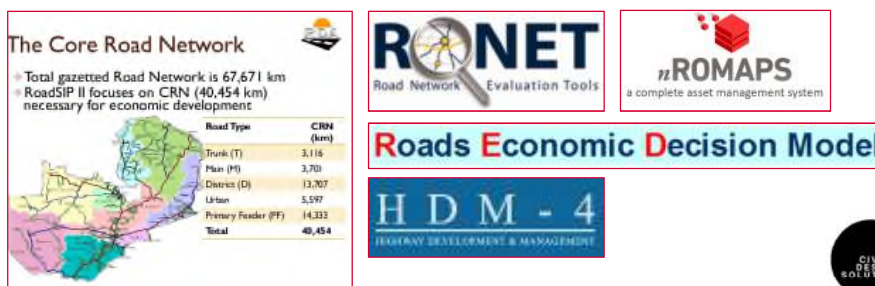


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Road Maintenance in Africa - Management



- Road agencies often fail to utilise available resources in the most effective way - lack of accountability.
- Political interference is common and corruption rife.
- Private sector capacity developing slowly due to short duration and small size of contracts.
- Examples of good practice tend to be on donor-funded programmes with high levels of TA, but tend to flounder when donor support withdrawn.



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Purpose and Objectives of the Project



Purpose

To achieve economic and social benefits for local communities as a result of improved performance in rural road asset management.

Objectives


1. Review literature on existing and recent road management and maintenance programmes; identify 'what works' and 'what doesn't work'.
2. Develop a framework to measure road asset management performance and apply it in the project areas.
3. Develop simple 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 improvements to road asset management performance in the project areas.

Time Frame

27 months




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Approach


- Encourage greater accountability of road agencies to road users and other stakeholders.
- Focus more on improved performance in road asset management than on any specific or pre-conceived road asset management system.
- Provide opportunities for the participating road agencies and their stakeholders to improve their own performance.
- Support to the process through demand-led technical assistance.
- Develop a mechanism for participating road agencies to share their experiences (successes and shortcomings) – **Project Implementation Team**
- Use pressure from communities, road users and professional peers to achieve greater accountability in road agencies and increase political support for road maintenance.




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Formulation Phase (Nov 2015 to June 2016)

| Activities | |
|--|---|
| <ul style="list-style-type: none"> Agree objectives, scope, methodology and study team. Literature Review. |  |
| <ul style="list-style-type: none"> Develop detailed methodologies for the: <ul style="list-style-type: none"> Assessment of asset management performance Measuring road condition Measuring social and economic impacts | |
| <ul style="list-style-type: none"> Identify project areas (4). Establish Project Implementation Team (PIT). | |
| | |

✓ Final Formulation Phase Report



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Project Areas

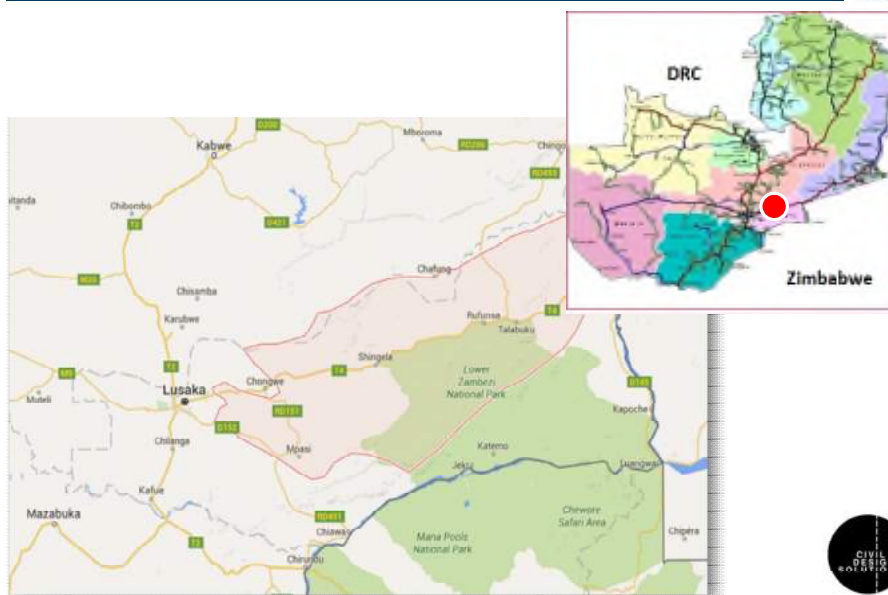


- Three research areas plus example of best practice
- Western Cape identified as adopting best practice
- AFCAP participating countries were invited to submit proposals – why should they participate in the project?
- Selection criteria:
 - Geographical spread
 - Range of existing network management systems
 - Linkages with other AFCAP-funded projects
 - Commitment to provide the required resources and data in the project area
 - Willingness to disseminate the findings of periodic performance reviews.



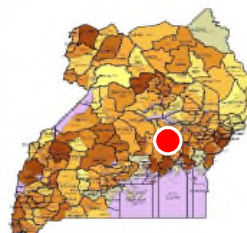
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Project Areas – Zambia Chongwe District



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Project Areas – Uganda Kamuli District



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Project Areas – Sierra Leone Tonkolili District



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Project Areas – Western Cape – Overberg




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Self Assessment Questionnaire



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Self Assessment Questionnaire (1)

Building Block 3: Financial

Key objective: The achieve stable, adequate and sustainable funding for maintenance.

| 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? | | |

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Self Assessment Questionnaire (2)

Building Block 3: Financial

Key objective: The achieve stable, adequate and sustainable funding for maintenance.

| QUESTION | YES/NO | JUSTIFICATION/COMMENT |
|--|--------|-----------------------|
| 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? | | |

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Self Assessment Questionnaire (3)

Building Block 3: Financial

Key objective: The achieve stable, adequate and sustainable funding for maintenance.

| QUESTION | YES/NO | JUSTIFICATION/COMMENT |
|---|--------|-----------------------|
| 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? | | |





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Social and Economic Data

10 trading centres / villages selected in each of the participating districts
 Collect social and economic data related to road access and transport.



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| Social and Economic Data | |
|---------------------------------|---|
| 1 | Name of trading centre/village |
| 4 | Population |
| 5 | Distance from nearest paved road |
| 6 | Distance from district centre. |
| 10 | No. of private transport operators serving the trading centre/village |
| 10.1 | Light vehicle |
| 10.2 | Bus/combi |
| 10.3 | Motorcycle (boda-boda) |
| 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) |

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| Social and Economic Data | |
|--|--|
| Commodity prices | |
| Prices of three items exported from the village (e.g. potatoes, rice, maize, charcoal) | |
| Prices of three items imported into the village (e.g. petrol, soap, batteries, seed, fertiliser) | |
| Road Safety | |
| Is road safety awareness taught to children at the school? | |
| Are road safety awareness presentations made to adults in the village? | |
| No. of accidents on the road serving the trading centre /village for past year | |
| Health | |
| Average no of health workers at clinic each month for the past year | |
| Is there an ambulance service available from the clinic to the district hospital? | |

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Road Inventory and Condition



| INVENTORY AND ROAD CONDITION DATA TO BE COLLECTED | | |
|---|-----------------------|--------------------|
| Data Items | Units | Reporting Interval |
| Location Referencing | | |
| • Location referencing (Spatial) | As files/shape | |
| • Location referencing (Linear) | Km + 10 | |
| • GPS Coordinates (Coordinates) | road id/m | |
| Road Inventory | | |
| Road - General | | |
| • Road Type | | when change occurs |
| • Road Condition (MTR) | 0 | when change occurs |
| • Cross Section Width | m | when change occurs |
| • Roadment Surface Type | | when change occurs |
| • Roadment Surface | | when change occurs |
| • Roadment Type | | when change occurs |
| • Roadment Width | m | when change occurs |
| • Side Slope Type | | when change occurs |
| • Side Slope Width | m | when change occurs |
| • Side Slope Length | m | when change occurs |
| Road Features | | |
| • Barriers | | location |
| • Signs | | location |
| • Road Drainage | | location |
| Road Drainage Structures | | |
| • Location | name | year |
| • Road Type | | when change occurs |
| Roadside Features | | |
| • Barriers | | year |
| • Signs | | year |
| • Structures, etc. | | year |
| Road Geometry | | |
| • Horizontal Alignment | Plan, E, L, R | when change occurs |
| • Vertical Alignment | Profile, Station, Dip | when change occurs |
| • Segmentation Type | | when change occurs |
| Structures | | |
| Structures - Bridges | | |
| • Assessment (Condition) | 0 | |
| • Structure Name | Region & District | Year |
| • City/Township | Region & District | Year |
| • Roadway | Region & District | Year |
| • Roadway | Region & District | Year |
| • Structure - Cost (Approx) | Region & District | Year |
| • Structure - Date Constructed | Region & District | Year |
| Structures - Tunnels | | |
| • Overall Condition | Region & District | |
| Structures - Other Structures | | |
| • Overall Condition | 0 | year |
| Asset Health | | |
| • MTR Value Logging | | year |
| • Digital Images of Joints | | year |
| • Digital Images of Bridges & Road Structures | | year |

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Implementation Phase



STAGE 1




- Identify target road networks
- Conduct baseline studies:
 - Self-assessment of asset management performance
 - Road condition and asset value
 - Social and economic data.
- Discuss baseline data with sector stakeholders in project areas and PIT.

STAGE 2

- Analyse the strengths and weaknesses of existing systems
- Propose modifications and improvements
- Prepare guidelines/training courses
- Technical back-up support and mentoring.

STAGE 3

- Repeat the self assessments and performance monitoring
- Discuss the monitoring outcome findings with sector stakeholders and PIT.

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Implementation Phase



- All local costs for data collection must be met by the participating country
- AFCAP is providing for:
 - Technical assistance to develop the research instruments
 - Technical assistance to participating road agencies to improve their network management arrangements
 - Cost of participation in the PIT meetings.



Vision



Roll Out

Repeat the process adding more countries and study areas.....

Added Value

Improved performance in rural road asset management in the project areas leads to a demand for improved performance in other areas within the same country.



Vision – A role for ARMFA?



Given that:

- The project will demonstrate the benefits of improved management and maintenance of rural roads.
- The project will provide a mechanism to achieve improved performance in roads agencies.
- The approach can be rolled out in more countries.
- The current project support from AFCAP only to end of 2017.

Could ARMFA secretariat take responsibility for:

- ✓ facilitating entry of new countries?
- ✓ coordination of the annual PIT meetings?

