

# Capacity Building and Mentorship for the Establishment and Implementation of Monitoring & Evaluation Programmes on Experimental and Long-Term Pavement Performance (LTPP) Sections in Six African Countries and Myanmar

Inception Report (Final)



Civil Design Solutions and IMC Worldwide

GEN2132A

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For further information, please contact: Francis Dangare, Francis.Dangare@imcworldwide.com

ReCAP Project Management Unit  
Cardno Emerging Market (UK) Ltd  
Oxford House, Oxford Road  
Thame OX9 2AH United Kingdom



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Cover photo: FWD Equipment for deflection measurements.

### Quality assurance and review table

Version	Author(s)	Reviewer(s)	Date
1	Francis Dangare	Robert Geddes	
		N Leta L Sampson	25 June 2018
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## Abstract

The Research for Community Access Partnership (ReCAP) is providing support to Road Research Centres (RRC) in sub-Saharan Africa and Asia to collect performance-based data from existing trial/demonstration road sections. The data will provide evidence for the establishment of appropriate specifications for Low Volume Roads. The road sections are being monitored and evaluated in terms of the pavement design, materials and surfacing, drainage design, geometric design, road safety and performance under traffic. Monitoring is being carried out in accordance with existing guidelines for the establishment and monitoring of experimental and LTPP sections, which will be updated under the project.

The Inception phase of the project includes a visit by the CDS advisory team to Malawi, Kenya, Uganda and Ethiopia in May 2018 to meet the participating roads agency staff and the local consultants, visit a selection of roads earmarked for monitoring, and assess monitoring work already carried out. South Sudan will participate in the next round of country visits and DR Congo will participate in the project workshop. Preparations are in place for an initial visit to Myanmar in July 2018.

A key objective of the project is to develop capacity within each RRC to independently manage the monitoring programme in the longer term. Local consulting firms are assisting the RRCs in Africa with the field monitoring activities and to build capacity and interest in research in the local consulting industry. In Myanmar the field work will be carried out in-house by the Research & Development Unit (RDU) of the Department for Rural Road Development (DRRD), Ministry of Construction.

## Key words

Performance Monitoring, Low Volume Roads, Capacity Building

### Research for Community Access Partnership (ReCAP)

#### Safe and sustainable transport for rural communities

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

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

## Acronyms, Initialisms, Units and Currencies

AA	Across Africa Consultants
AASHTO	American Association of State Highway Officials
ADB	Asian Development Bank
AE	Alert Engineering
AfCAP	Africa Community Access Partnership
AsCAP	Asia Community Access Partnership
ASWAp	Agriculture Sector Wide Approach Support Project
BI	Bump Integrator
BS	British Standard
CDS	Civil Design Solutions
CMA	Cold Mix Asphalt
DCP	Dynamic Cone Penetrometer
DF	Drainage Factor
DFID	Department for International Development
DN	Depth of Penetration of the DCP (mm/blow)
DR Congo	Democratic Republic of Congo
DRRD	Department for Rural Roads Development (Myanmar)
DSD	Double Surface Dressing
ERA	Ethiopia Roads Authority
FNP	Francis Namonjeza and Partners
FWD	Falling Weight Deflectometer
GoE	Government of Ethiopia
GoK	Government of Kenya
GoM	Government of Malawi
GoU	Government of Uganda
GPS	Global Positioning System
IRIM	Inter-Regional Implementation Meeting
LTPP	Long-Term Pavement Performance
LVR	Low Volume Road
LVSR	Low Volume Sealed Road
MTRD	Materials Testing and Research Department
PLC	Private Limited Company
RA	Roads Authority (Malawi)
RDU	Research and Development Unit
ReCAP	Research for Community Access Partnership
RRC	Road Research Centre
SANS	South Africa National Standards
TMH	Technical Methods for Highways

UNRA            Uganda National Roads Authority  
UK              United Kingdom (of Great Britain and Northern Ireland)  
UKAid         United Kingdom Aid (Department for International Development, UK)

# 1 Introduction

## 1.1 Purpose of the Report

This report covers the inception phase of the project for Capacity Building and Mentorship for the Establishment and Implementation of Monitoring and Evaluation Programmes on Experimental and Long-Term Pavement Performance (LTPP) Sections in Six African Countries and Myanmar. The report provides information on the nature of the project including the aims and objectives, methodology, key activities, intended outputs, progress to date and updated work plan.

## 1.2 Background

The Research for Community Access Partnership (ReCAP) is a six-year programme of applied research and knowledge dissemination funded by a grant from the UK Government through the Department for International Development (DFID). The overall aim of ReCAP is to promote safe and sustainable rural access in Africa and Asia through research and knowledge sharing between participating countries and the wider community.

Cardno Emerging Markets (UK) Ltd has been contracted by DFID to manage ReCAP. There are two components under ReCAP: the Africa Community Access Partnership (AfCAP) and the Asia Community Access Partnership (AsCAP).

A significant portfolio of research activities has now been established in the ReCAP participating countries. ReCAP provides technical assistance for these activities and promotes the uptake of the research findings through revised, country specific design standards and specifications.

In Africa, ReCAP is providing support to various Road Research Centres to collect performance-based data from existing trial/demonstration road sections. This data is expected to provide evidence for the establishment of appropriate, cost-effective standards and specifications for Low Volume Roads. The road sections are being monitored and evaluated in terms of their performance related to pavement design, materials and surfacing, drainage design, geometric design and road safety, in accordance with existing guidelines for the establishment and monitoring of experimental and LTPP road sections. ReCAP support is now being extended to Asia.

Civil Design Solutions was contracted by Cardno to provide capacity building and mentorship support to the participating roads agencies and national consultants that have been engaged to collect data on the trial/demonstration road sections. Support will also be provided for the analysis of the data and reporting of the results.

The countries that are initially participating in the project are Malawi, Kenya, Uganda, Ethiopia, South Sudan, DR Congo and Myanmar. Other countries may be included in the project. Local consultants have been appointed in Malawi, Kenya and Ethiopia for the collection of data on the research sites as follows:

- Malawi: FN & Partners;
- Kenya: Across Africa Consultants; and
- Ethiopia: Alert Engineering.

ReCAP has commenced the procurement of the monitoring consultant for Uganda. The consultant is expected to be appointed in August 2018. In Myanmar the field work and data analysis will be carried out by the Research & Development Unit (RDU) of the Department for Rural Road Development (DRRD).

### 1.3 Research objectives

The research objectives of the project include:

- Support the six participating Road Research Centres in Africa and DRRD RDU in Myanmar with managing the establishment and implementation of monitoring programmes on selected road sections;
- Provide in-service training and mentorship to RRC personnel and local consulting firms conducting the monitoring of the trial sections;
- Support the RRCs with the analysis and reporting of data obtained from the sites;
- Further develop and customise existing regional guidelines for the establishment and monitoring of experimental and LTPP Sections to ensure harmonised implementation in the region and consistency of methodologies for collecting performance data to facilitate compatibility and comparability of data for analysis; and
- Recommend modifications to the existing design standards and specifications for Low Volume Roads (LVRs).

### 1.4 Methodology

#### 1.4.1 Tasks of the Advisory Team

In accordance with the Terms of Reference and the CDS technical offer, the tasks to be carried out by the CDS Advisory Team under the assignment are as follows:

1. Accompany the local consultants and RRC research teams on their visits to selected sites during the initial visit and subsequent rounds of monitoring;
2. Advise the RRCs and local consultants on tests and data collection to be carried out on the monitoring sections and a programme for the field surveys;
3. Assist the RRCs and local consultants to identify and prioritise new trial sections and to mark out the sections in accordance with the monitoring guidelines;
4. Identify and characterise the field equipment that is being used to assess the condition of the existing trial sections and recommend, where appropriate, additional equipment necessary for collection of performance data;
5. Review all data collected at the research sites, advise the local monitoring consultants and RRC research staff on the evaluation of the data, and check the output of the evaluation;
6. Assist the local monitoring consultants and RRC research teams to develop a format for reporting of the results of the monitoring based on the current regional guidelines;
7. Review the draft reports prepared by the local monitoring consultants and RRCs and ensure they meet the required standard;
8. Review and analyse all available national and international guidelines and protocols on the establishment and monitoring of trial sections and customise the standard regional protocols for specific investigations including structural design, materials usage, surfacing types, traffic loading, evaluation of gravel loss on unpaved roads, drainage effectiveness, societal impacts, etc.;

9. Organise a 2-day regional stakeholder workshop in one of the participating countries to discuss the monitoring programme in each participating country;
10. Advise the RRCs on recommendations for modifications to the existing design standards and specifications for LVSRs based on the outcome of the evaluation of the monitoring; and
11. Assist with the compilation of construction and maintenance costs to facilitate computation of life-cycle costs for the sections for comparison with existing gravel roads or upgrading to a surfaced standard using traditional standards and specifications generally applied to higher volume roads.

#### **1.4.2 Expected Deliverables**

The project deliverables include:

- Inception report;
- Technical reports following each in-country visit, including reports on any training carried out;
- Monitoring reports prepared by the local consultants and jointly reviewed by the RRCs and CDS;
- Technical papers and other dissemination materials: RRC researchers and local consultants will be assisted to prepare technical papers for presentation at national, regional and international forums and for publication in recognised journals;
- Regional stakeholder workshop;
- Final draft of Regional Guidelines/Protocols; and
- Final Report of the project.

### **1.5 Inception Phase**

#### **1.5.1 Activities**

The inception phase involved the following activities:

- Mobilisation of the Advisory Team;
- Review of available data sources from the ReCAP website and internal sources; and
- Preparation of the work plan for the initial country visits.

#### **1.5.2 Mobilisation of the Team**

The Advisory Team for the project was mobilised as follows:

- Robert Geddes – Project Director;
- Francis Dangare – Team Leader Africa;
- Mike Pinard – Materials Expert; and
- Pham Gia Tuan: Trials Monitoring Engineer Myanmar.

#### **1.5.3 Review of Existing Report and Monitoring Guidelines**

The Advisory Team carried out a review of:

- the available data relating to the long-term pavement performance monitoring and back analysis of existing roads which was carried out under the first phase of AfCAP;

- reports on monitoring and technical audit activities carried out under AfCAP II in Mozambique, Kenya, Ethiopia and Malawi; and
- the existing monitoring guidelines developed in Mozambique, Kenya and Ethiopia.

Key technical issues and recommendations arising from this review concern mainly the regional monitoring guidelines and testing standards as follows:

- The existing monitoring guidelines (Mozambique version) could be improved through the inclusion of photographs depicting each defect that must be monitored in the visual condition surveys. It may be beneficial to produce a stand-alone “Raters’ Manual” for this purpose, possibly in A5 format for easy use on site.
- Monitoring guidelines already exist in Ethiopia and Kenya and were developed under previous AfCAP initiatives. A decision will be required on whether to continue with the use of these country-specific guidelines in the short term or to move immediately towards a common regional guideline.
- Clarity is needed on the materials testing standards and specification to be adopted on the LTPP monitoring projects. The participating countries are known to use either the BS or AASHTO test methods interchangeably and in most cases both of them depending on the test being carried out. This can result in different results for the same material tested by the two methods. The Regional Guidelines will need to provide guidance on how these differences should be accommodated.

#### **1.5.4 Preparation for Country Visits**

Preparations were made for the initial country visits in consultation with the ReCAP Project Management Unit (PMU), the participating roads agencies and the local monitoring consultants. The proposed itinerary for the visit and a list of required equipment for use on the sites was prepared and sent to the roads agencies. The detailed itineraries are included in Chapter 2.

#### **1.6 Complementary Programmes**

The process and findings of the Regional LTPP project will be linked with those from the AfCAP Regional Back-Analysis Project and other ReCAP performance monitoring projects in the region. This will ensure compatibility of the data and testing. It is expected that all data collected under the project will be uploaded to the regional database that has been developed under the Back-Analysis Project. The CDS team will provide support to this process where possible.

## 2 Country Visit Programme (Africa)

### 2.1 Malawi Visit

The programme for the initial visit to Malawi is given in Table 1. The host agency is the Malawi Roads Authority (RA) and the local monitoring consultant is FN and Partners. The visit will include a “Kick-off Meeting” for the overall project to be attended by the ReCAP Technical Manager for East and Southern Africa. Field work will focus on the T357 Parachute Battalion – Lifuwu Road near Salima, which is not yet under a monitoring programme. The road was built under the World Bank funded ASWAp<sup>1</sup>.

**Table 1: Itinerary for Malawi Visit**

Day	Date (2018)	Task
Sunday/Monday	29/30 April	Arrival of CDS team in Lilongwe
Monday	30 April	14:00H: Kick-Off Meeting with Malawi Road Authority (RA) and FN & Partners (FNP) and arrangements for site visits.
Tuesday	1 May	Public holiday Internal CDS team meeting
Wednesday	2 May	Site Visit with RA and FNP to T357 Parachute Battalion – Lifuwu Road. Mark out monitoring sections and commence data collection. Overnight Salima.
Thursday	3 May	Continue site work at Salima. Proceed to Lilongwe via S134 Kasinje - Kandeu Road in Ntcheu District).
Friday	4th May	9am: Wrap Up meeting with RA and FNP.
Friday	4th May	Departure of Project Director and Materials Expert.
Saturday	5th May	Departure of Team Leader for Kenya

### 2.2 Kenya Visit

The programme for the initial visit to Kenya is given in Table 2. The host agency is the Materials Testing and Research Department (MTRD) of the Ministry of Works and the local monitoring consultant is AA Consultants. Four trial sections will be visited. These trials were built under previous phases of AfCAP and are already under a monitoring programme. The pavement design includes natural gravel bases and Cold Mix Asphalt surfacing.

**Table 2: Itinerary for Kenya Visit**

Day	Date (2018)	Activity
Saturday	5 <sup>th</sup> May	Arrival in Nairobi.
Sunday	6 <sup>th</sup> May	Preparation for Country Visit.
Monday	7 <sup>th</sup> May	09:00H: Kick-off Meeting with Materials Testing and Research Division (MTRD) and Across Africa Consultants (AA).
Tuesday	8 <sup>th</sup> May	Review of Baseline and First Monitoring Report.
Wednesday	9 <sup>th</sup> May	Site Visit with MTRD and AA to Site 2, 3 and 4 (Muranga, Nyeri and Nyandarua).
Thursday	10 <sup>th</sup> May	Site Visit with MTRD and AA to Site 1 (Kiambu).

<sup>1</sup> Agriculture Sector Wide Approach Support Project.

Day	Date (2018)	Activity
Friday	11 <sup>th</sup> May	Review of Baseline Survey and First Monitoring Reports (ReCAP PMU, CDS, AA).
Saturday	12 <sup>th</sup> May	Review of Baseline Survey and First Monitoring Reports (ReCAP PMU, CDS, AA).
Sunday	13 <sup>th</sup> May	Review of Baseline Survey and First Monitoring Reports, (CDS, AA). Departure of AfCAP Regional Technical Manager for Accra.
Monday	14 <sup>th</sup> May	Preparation of Baseline Survey and First Monitoring Reports (CDS, AA).
Tuesday	15 <sup>th</sup> May	Presentation of Baseline Survey and First Monitoring Reports to MTRD.
Wednesday	16 <sup>th</sup> May	Wrap Up Meeting Departure of Team leader for Uganda.

### 2.3 Uganda Country Visit

The programme for the initial visit to Uganda is given in Table 3. The host agency is the Uganda National Roads Authority (UNRA). The local monitoring consultant has not yet been appointed. It is intended to monitor the performance of the Matugga-Semuto-Kapeeka Pilot/Demonstration Project (PDP). This road was constructed in 2009 with funding from the Nordic Development Fund (NDF) under a Pilot Project for the Demonstration of Innovative Technologies for the Construction of Low Traffic Volume Bitumen Sealed Roads. No formal monitoring has been carried out on this road since construction.

**Table 3: Itinerary for Uganda Visit**

Day	Date (2018)	Task
Wednesday	16 <sup>th</sup> May	Arrival in Entebbe
Thursday	17 <sup>th</sup> May	Meeting with UNRA
Friday	18 <sup>th</sup> May	Site Visit to Matugga-Semuto-Kapeeka Pilot/Demonstration Project (PDP)
Saturday	19 <sup>th</sup> May	Depart for Addis Ababa

### 2.4 Ethiopia Country Visit

The programme for the initial visit to Ethiopia is given in Table 4. The host agency is the Road Research Centre (RRC) of the Ethiopia Roads Authority (ERA) and the local monitoring consultant is Alert Engineering. The field work will focus on the trial sections built under the first phase of AfCAP (2008 to 2014) in the villages of Gerado and Combel. The trials included Otta Seals using natural gravel and crushed aggregate on natural gravel bases. Monitoring data has been collected on these roads since soon after their construction.

**Table 4: Itinerary for Ethiopia Visit**

Day	Date (2018)	Task
Saturday	19 <sup>th</sup> May	Arrival in Addis Ababa
Sunday	20 <sup>th</sup> May	Preparation for Country Visit
Monday	21 <sup>st</sup> May	09:00H: Meeting with ERA RRC and Alert Engineering PLC (AE). • Arrangements for site visits (AE).

Day	Date (2018)	Task
Tuesday	22 <sup>nd</sup> May	Site Visit with ERA and AE to Site 1- Otta Seal Section in Gerado Village. Overnight in Dessie.
Wednesday	23 <sup>rd</sup> May	Completion of site data collection in Gerado. Travel to Addis Ababa
Thursday	24 <sup>th</sup> May	Site Visit with ERA and AE to Site 2. – Otta Seal in the village of Combel.
Friday	25 <sup>th</sup> May	Site Visit to RRC Wrap up meeting with ERA RRC
		Evening – Departure of Team Leader to London

## 2.5 South Sudan and Democratic Republic of Congo

A visit to South Sudan will be included in the second round of country visits scheduled for September/October 2018. Representatives from DR Congo will participate in the project workshops.

## 3 Myanmar

### 3.1 Monitoring of Surfacing Trials

The ReCAP PMU is extending the monitoring project to include Myanmar in South East Asia. The monitoring will be carried out on surfacing trials constructed on a 2.23km long road off the Taunggyi–He Ho Road near Taunggyi in the Shan State. The purpose of the trials was to provide practical information on design, procurement and construction issues relevant to alternative pavement and surfacing options.

The construction of the trials was completed in November 2016 and comprised:

- Penetration Macadam over standard DRD stone macadam base and sub-base;
- double-chip emulsion seal (DBST) over dry-bound stone macadam base and subbase;
- non-reinforced concrete slabs over dry-bound stone macadam sub-base; and
- concrete blocks over dry-bound stone macadam sub-base.

The objective of the CDS assignment is to provide capacity building and mentorship support to the DRRD Research Unit in Myanmar for:

- managing the establishment and implementation of a monitoring programme for the **existing** surfacing trials sections;
- analysis of the data; and
- reporting of the results.

It is expected that lessons learned from the regional monitoring project in Africa will be applied to the Myanmar project, including the introduction of the regional monitoring guidelines.

### 3.2 Inputs

It is proposed to carry out 5 trips to Myanmar over a period of 2 years from July 2018. The first visit will include all three members of the CDS team. On this visit the discussions will focus on defining research objectives, protocols for monitoring, roles and responsibilities, and the schedule of activities for the remainder of the project. It will also include selection of the monitoring sections and the initiation of the testing protocols. The second, third and fourth visits will be conducted by the Trials Monitoring Engineer to monitor and support the work of the DRRD. The final visit will include all three members of the CDS team and is expected to include a mini-workshop to discuss the outcome of the monitoring process and analysis of data.

Tentative dates for the five visits are:

- 1st visit: July 2018
- 2<sup>nd</sup> visit: November 2018
- 3<sup>rd</sup> visit: July 2019
- 4<sup>th</sup> visit: January 2020
- 5<sup>th</sup> visit (including the workshop): before May 2020.

### 3.3 Deliverables

After each site visit the CDS team will submit a report, which will trigger a milestone payment. The reports will provide details of:

- the activities carried out on the visit;
- The lessons learned and challenges faced and the manner of addressing them;
- a review of any data collection, analysis and reports prepared by DRRD since the previous report; and
- an updated programme of monitoring activities for the next reporting period.

## 4 Risks

The risks that have been identified to the successful implementation of the project are summarised in Table 5.

**Table 5: Project Risks**

Anticipated Risk	Countries Affected	Impact of the Risk	Proposed Mitigation
There are delays in appointing the local monitoring consultants.	Uganda and South Sudan	Implementation of project delayed.	Procurement Notice for Monitoring Consultant posted on ReCAP website (Uganda).
Local consultants are unable to adequately pre-finance their fieldwork.	None affected to date.	Failure to carry out baseline survey and monitoring survey visits.	Select local consultants with sufficient resources.
Local RRC members have inadequate resources for their travel and field expenses.	None affected to date.	Failure to carry out baseline survey and monitoring survey visits.	Local consultants provide transport for RRC members.
Equipment for site monitoring is not available or is not in good working order.	Kenya	Monitoring outputs and deliverables may not be realised.	Select local consultants with sufficient resources.
Adverse political and security situation prevents the proposed visit.	South Sudan	Monitoring project may not be implemented.	Continue monitoring events and liaise with South Sudan Road Authority and ReCAP PMU.
Representatives from South Sudan and DR Congo are unable to travel for capacity building activities due to the security situation	South Sudan D R Congo	Affected country may not benefit from regional project.	Continue coordination and dissemination of information regarding regional project.
There are delays in the construction of trial sections	D R Congo	Affected countries receive no immediate benefit from the regional project.	Regional monitoring guidelines need to be clearly set out for wider and long-term use so they are available to the participating countries in the future.
Participating countries fail to coordinate their field monitoring activities according to an agreed programme.	ALL	Inefficient use of the international consultant's time.	Coordination and advance planning of country visits by the national RRCs and the Regional Consultant.
Unavailability of construction and maintenance costs	ALL	Inaccurate life cycle costs	Review all available data and records from ReCAP and RRCs. Follow up with RRCs and their document controllers

## 5 Work Plan for the Regional Monitoring Project (Africa Component)

### 5.1 Work Plan

The detailed work plan for the Africa component of the project can be found in Table 6. The timing, sequence and duration of the tasks has not changed from the work plan set out in the CDS Technical Offer for this contract. Five Monitoring Reports are envisaged at six monthly intervals plus this Inception Report, an Initial Country Visit Report and a Workshop Report.

### 5.2 Project Workshops

In the CDS Technical Offer a proposal was made for an integrated and participatory approach to the project involving the six participating countries (now seven). It was recommended to ReCAP management that a planning workshop should be held near the start of the project with all countries present (possibly including Myanmar). This would ensure a harmonised approach and would facilitate efficient planning of the future country visits. The workshop would include initial awareness and training in the regional LTPP protocols, presentations by each country on their monitoring activities and initial lessons learned, and presentations on the AfCAP Regional Back Analysis Project and the Mozambique and Tanzania LTPP monitoring projects. If funds are available, it could include a visit to an experimental site in the host country. A second workshop would be held at the end of the project.

Upon consultation with the ReCAP PMU, the agreed approach is that workshops should be held in each of the participating countries to facilitate wider participation compared to, at most, two people from each country who would be able to attend a regional workshop. The regional workshop envisaged towards the end of the project would then include only key RRC personnel.

Meanwhile, the planned ReCAP Inter Regional Meeting (IRIM) planned for February/March 2019 provides an opportunity to conduct a combined Initial Workshop for the project. The timing of the IRIM provides adequate time for the participating countries, especially the new entrants, Uganda, Malawi and South Sudan to establish their monitoring programmes and have sufficient material for their presentations. If the IRIM is held in one of the participating countries, it may be possible to arrange a visit to one of the monitoring sites.

### 5.3 Inter-Country Coordination

The Initial Project Workshop at the IRIM will provide an opportunity not only to share experiences and lessons learnt in undertaking the LTPP but, also, to establish an informal oversight committee for the project (**Project Implementation Team**) including representatives from each of the participating countries. This group would provide a coordinating and knowledge sharing role and general oversight of the project implementation. The LTPP-PIT would report to ReCAP management and sector stakeholders through subsequent ReCAP events. The members would communicate through email and a project WhatsApp group.

Table 6: Work Plan (Africa Component)

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
<b>Work Schedule</b>	<b>Months</b>																									
<b>Activities</b>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Project Launch Meeting	█																									
Task 1: Assess on-going and planned LTTP monitoring programmes in participating countries	█	█	█																							
Inception Mission		█	█																							
Task 2: Provide capacity building and mentorship support/counterpart training	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	
Task 3: Accompany the local consultants and RRC research teams on their visits		█	█				█	█				█	█				█	█				█				
Task 4: Identify and characterise field equipment		█	█				█	█																		
Task 5: Review all data collected at the research sites			█					█					█					█	█					█		
Task 6: Develop a format for reporting of the results	█	█	█	█	█																					
Task 7: Review and analyse all available national and international guidelines	█	█	█	█	█	█	█																			
Task 8: Organise a 2-day regional stakeholder workshop																		█								
Task 9: recommendations for modifications to the existing design standards and specifications for LVSRs																							█	█		
Task 10: compilation of all construction and maintenance costs			█					█					█					█	█				█	█		
<b>Deliverables</b>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
Inception Report		●																								
Consultant Field Visit Reports		●					●				●			●				●					●			
Review of Monitoring Consultant Reports		●					●				●			●				●					●			
Workshop Report																							●			
Final draft Regional Guidelines/Protocols																							●			
Final Project Report																								●	●	
<b>Expert</b>	<b>Estimated Time Inputs</b>																									
Project Director	2	1	4	1	2		1	1	1			1	1	1				1	1	1		2	3	2	<b>Total Days</b>	
Team Leader	2	4	10	10	2	3		10	6	2	3			10	6	2	3			10	6	2	3	5		
Materials Expert	4	4	1	2			2							2						2			2	2		
<b>Support Staff</b>																										
Days																										
	Inputs provided in participating countries																	=								<b>174</b>

