

# Workshop on a Sustainable Approach to Infrastructure Planning and Delivery and National Drainage Policy in Ethiopia

Hilton Hotel, Addis Ababa  
14<sup>th</sup> June 2014

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This project was funded by the Africa Community Access Programme (AFCAP) AFCAP is a DFID (UK) funded research initiative for the rural transport sector in Africa. AFCAP is addressing the challenges of providing reliable access for poor communities.

AFCAP provides advice and undertakes research to facilitate the delivery of safe and sustainable rural access. The programme is based around a portfolio of research, demonstration, advisory and training projects, which identify and support the uptake of low cost, proven solutions for rural access that maximise the use of local resources. The outputs from these projects are feeding directly into regional and national rural transport policies and strategies for poverty reduction.

The effects poor drainage infrastructure are increasingly being felt by rural communities in Ethiopia. For example higher intensity rainfall in some areas are resulting in washaways of existing drainage structures on rural roads, thus contributing to increased isolation and the current road drainage design practices are inadequate.

AFCAP has a responsibility to raise awareness of these important issues and therefore has funded the National Drainage Workshop that was held in Addis Ababa, Ethiopia on the 14<sup>th</sup> June 2014.

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## List of Abbreviations

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AFCAP	Africa Community Access Programme
DFID	Department for International Development
ERA	Ethiopian Roads Authority

It should be noted that the BSI Symbol and UKAS Accreditation mark signify that Crown Agents operate a documented Quality Management System registered with the British Standards Institution to the international quality standard BS EN ISO 9001:2008. The provision of consultancy services in revenue enhancement and expenditure and debt management including: customs, taxation and trade, human institutional and organisational development, engineering, procurement management advice and reform, health logistics and procurement services. The management of third party quality assurance and inspection services related to the supply of manufactured and processed products. International freight forwarding services utilising in house sub-contract warehousing. Verification of service as follows: Air Import – Clearance UK airport; Exports – Airport of departure; Sea Imports – Clearance UK port; Sea Exports – Port of loading.



## **1 WORKSHOP OBJECTIVES**

The Workshop on a Sustainable Approach to Infrastructure Planning and Delivery and National Drainage Policy in Ethiopia was hosted Ethiopian Roads Authority (ERA). The workshop was organized by ME Consulting Engineers and ERA in collaboration with the Africa Community Access Programme (AFCAP). It was held on 14<sup>th</sup> June 2014 at the Hilton International Hotel in Addis Ababa, Ethiopia.

ME Consulting has presented four (4) technical presentations related to sustainable road drainage design, construction, operation and maintenance in Ethiopia. The first of its kind, the workshop brought together key stakeholders from national and international consultants and contractors, utility providers, policy makers and National Academic institutes. It discussed the current state of knowledge on the sustainable road drainage design; identified current gaps in advanced knowledge; identified priority areas and outlined an agenda to advance drainage research that will inform best practice in road drainage design and adaptation techniques.

The main objective of this workshop was to bring together all stakeholders, professional bodies, policy makers, academic institutes, international and local consultants, to share ideas and to review current road drainage design and construction practices with respect to rural roads in Ethiopia. The aim was to formulate a national policy document together with guidance which will map out the various stages of rural road drainage project delivery. It is proposed that any road drainage project proposals taken forward will be assessed on social, environmental and economic grounds.

The workshop has also discussed the establishment of stakeholder forum and the criteria and environment within which they will operate. This is likely to lead to the formation of a unified road drainage planning policy regulatory body with regional bodies to deal with specific local issues. This workshop has presented an excellent opportunity to meet policy makers and experts in road drainage design, construction, operation and maintenance.

## **2 PARTICIPATION**

The workshop was attended by 23 representatives from the government, development partners and private sector in Ethiopia. The attendance register is included in Annex A.

## **3 APPRECIATION OF THE PROBLEM**

The following is a summary of challenges faced by Ethiopia in managing drainage policy. These are the issues that formed the basis for the workshop discussions.

1. The current eight regional rainfall classifications for Ethiopia was undertaken in 1989. However, the catchment characteristics including land use/land cover have been changed since 1989 due to infrastructure developments, farming practices and

deforestation etc. There is an urgent need for the current regional rainfall classifications to be reclassified based on the current physical and hydro-meteorological circumstances of the country;

2. The current CN curve numbers (moisture content parameter) for wet and dry regions of Ethiopia are very crude and new CN curve numbers based on the soil moisture content should be generated for Ethiopia. However, in order to generate a reliable CN curve number, a localized/high resolution soil, topographical and land use/ land cover data is required which is absent at the moment for Ethiopia;
3. Lack of primary data to establish a national drainage design flow estimation method is a major contributor to the uncertainty in the design flow estimation and subsequent failure of road drainage structures. For a specific country, a specific flow estimation method established based on country specific data is essential. There is no standard national flow estimation method for Ethiopia at the present time. The current flow estimation methods used in Ethiopia are developed in other countries based on other country specific data. Although these methods are used internationally, the parameters used to develop the methods are calibrated with local country specific data before they are used for a road drainage project design work;
4. The workshop participants have acknowledged that an organized historical flood database is not available in Ethiopia and past major floods are not recorded and stored properly;
5. The coverage of the rainfall and flow gauging stations in Ethiopia is sparse and very limited and will be difficult to increase the coverage under the current financial constraints. The alternative to fill this gap is therefore by establishing a regional regression equations based on the available data from the existing stations; and
6. The effects of climate change are increasingly being felt by rural communities in Ethiopia. For example higher intensity rainfall in some areas might result in washaways of existing drainage structures on rural roads, thus contributing to increased community isolation.

## **4 WORKSHOP RECOMMENDATIONS**

The National Drainage Workshop participants agreed on the following recommendations:

- a. ME Consulting Engineers in collaboration with ERA to organize similar future workshops to continue the dialogue and to create awareness in relation to roads drainage design and construction issues facing Ethiopia.
- b. Recommended that further research is undertaken and the current regional rainfall classification for Ethiopia to be reclassified.
- c. Recommended that ERA considers funding a research project to review primary data in consultation with other stakeholders including the Ministry of Water, Energy and Irrigation, Ministry of Agriculture and The Ethiopian Mapping Agency etc.

- d. Recommended that ERA consider funding a research project to review primary data coverage, quality of existing data and establish a national road drainage design flow estimation method.
- e. Recommended that ERA in consultation with other stakeholders including the Ministry of Water, Energy & Irrigation (MoWEI), organize a centralized national historical flood database.
- f. Recommended that ERA to fund a research project to model and map the Climate Change Vulnerability of Rural Road Networks in Ethiop.

## ANNEX A: ATTENDANCE REGISTER


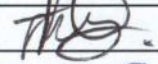

### Attendance Register for the Workshop on Sustainable Approach to Infrastructure Planning & Delivery in Ethiopia

Saturday 14 June 2014

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Saturday 14 June 2014

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