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Consultancy Services for Technical Assistance to the South Sudan Ministry of Transport, Roads and Bridges to Develop Road Research Capacity in the Directorate of Materials and Research

CONTRACT REF NO.
AFCAP/SSU/122

This Inception Report gives details of the future direction and activities of the project to provide technical assistance to the South Sudan Ministry of Transport Roads and Bridges to develop road research capacity in the Directorate of Materials and Research. It reports on the meetings held with stakeholders in South Sudan during the first mission in November 2013. This report also set out the future work programme.

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List of Abbreviations

AFCAP African Community Access Programme

DfID UK Department for International Development

DMR South Sudan Directorate of Materials and Research

MTRB South Sudan Ministry of Transport, Roads and Bridges

SSRA South Sudan Roads Authority

SSRRC South Sudan Road Research Centre

TRL Transport Research Laboratory

USAID US Aid for International Development

UNOPS United Nations Office for Project Services

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1. Introduction

The AFCAP programme commissioned TRL (the UK Transport Research Laboratory) to provide technical assistance to the South Sudan Ministry of Transport, Roads and Bridges (MTRB) to develop road research capacity in the Directorate of Materials and Research (DMR).

This assignment involves the development of the case for road research capacity in the country. It will enable and develop the skills of those who work in road sector research with the ultimate aim of utilising these skills to inform policy and technical decisions that will lead to improved and reliable access for communities in South Sudan.

This Inception Report gives details of the future direction and activities of the project to provide the required technical assistance. It builds on the offer made in the technical proposal.

2. Project Objectives

The objective is to assist the DMR in the restructured MTRB with its institutional arrangements and to develop a strategic plan for the implementation of its research mandate as set out in the MTRB Policy Document.

To achieve this, the project will undertake a four-fold approach:

- Develop the case for research;
- Identify possible sources of funding of research;
- Propose an appropriate institutional structure to undertake research in South Sudan; and
- Develop a Road Research Strategy.

2.1 The case for research

In order to justify the reason for further investment in research, and to secure government funding, it will be necessary to make a case for research. This would be equivalent to a business case, which can be done effectively for public bodies.

There are many studies that show the value of research and development. Even at a commercial level the most successful companies are those that devote appropriate resources and staff to research and development. As part of this project a case has to be made for research in the road sector. There is a wealth of information that can be accessed internationally to support this case, and TRL is ideally placed to provide and disseminate this information.

TRL has recently successfully undertaken similar assignment in Mozambique and Ethiopia i.e. to make the case for research in the transport sector. This will stand us in good stead to undertake this assignment.

2.2 The funding of research

Stable and substantial funding is necessary for research to be successful. TRL has the experience of receiving government funding as a government agency, as well as generating its own funding since it was privatised in the mid-1990's. As a government agency a research centre will require stable government funding, but should also look to generate a modest proportion of that funding via private means.

Despite the clear link between investment in research and economic development, politicians in some countries still appear to view research as an unnecessary expense. Consequently, funding for research is often minimal and even zero in many low-income countries. This situation particularly applies to the transport sector, despite the fact that the nominal amounts required to establish a research centre will be far outweighed by the benefits.

2.3 An appropriate institutional structure to undertake research

If the Research Centre is to function effectively it needs to be based on an appropriate institutional structure. TRL has its own experience managing a research centre, as well as establishing other research centres in Africa such as the Road Research Centre in Ethiopia. The institutional structure in terms of responsibilities and activities will depend on the remit as will the required human and physical resources required.

The key issue is to agree a clear 'brief' for the role and expected capacity of the research centre and hence what level and quantity of skill-set will be required.

We can present alternative structures for organisation of the research resources, based on our own experiences and those of other research bodies. This would be an iterative process that will be refined through interaction with key end-users of the research.

TRL has undertaken very similar projects recently in Ethiopia which involved developing organisational structures, creating visions, missions and goals for the organisation and setting research priorities for the local institution.

2.4 Development of a road research strategy

The agency will need a robust strategy for research that will support the development of the new RRC.

Much of the current funding for research projects in the transport sector is initiated and funded by the donor community, using international experts with local support in the form of counterpart professionals and logistic support. There has been little change in this approach in most countries for more than 40 years. Therefore it is indeed gratifying that South Sudan plans to establish an institution to develop indigenous capacity to undertake research.

In order to achieve this it will require an appropriate road research strategy that will focus on building local capacity to undertake research, funded sustainably and independent of political and international influence. There are some indications of a more strategic approach being taken by donors in making funds available to help build research capacity in the sector, rather than the more usual approach of transferring research knowledge and building capacity through projects. Tony Greening has been a 'champion' in this area for almost two decades and recently gave a presentation on this subject at a recent meeting of the Department for International Development (DfID) in the UK.

Finally it would be appropriate to add that TRL is experienced in developing research strategies, not only for itself but for other emerging research centres as shown in its experience.

3. Project team

The project team comprises TRL staff supported by experts from other companies (identified in Table 1). In addition to TRL (the UK's Transport Research Laboratory) the following companies form the team:

- IT Transport; and
- ALERT Engineering.

Table 1: Project team

Name of Staff	Role	Responsibility
Derek Palmer	TRL - Team Leader (TL)	A highly qualified transport planner and project manager with considerable experience of research, policy development and practice, stakeholder engagement, central and local government. Derek has a thorough appreciation of the public policy issues confronting both local and national government. His holistic understanding of transport means that he is able to view issues within the wider context. Derek was the Institutional Development specialist on TRL's recent project for the Ministry of Transport, Tanzania, "Developing Transport Research Capacity in Tanzania (2012)"
Alemgena Araya	Transport Specialist (Regional) (TS)	Specialising in road transport in the region. We have also included Alemgena in this project so as to expose local expertise of the region to research projects and thus enhance knowledge transfer.
Tony Greening	TRL - International Transport Sub-Sector Specialist (ITS)	For many years Tony has been expounding the virtues of appropriate institutional arrangements for the development of road research capability in Africa in particular. He was also the Team Leader for the recent DFID funded "Development of a road research strategy for Mozambique" project.
Kenneth Makura	Labour based and Low Volume roads Specialist LVR	Specialising in understanding of the use of local resources and labour-based methods for the construction and maintenance of roads in the region.
Mike Pinard	Pavements Specialist (PS)	Specialising in Pavement design for low volume rural roads using a range of materials including chemical stabilisation and the use emulsions for road bases and seals and design of thin bituminous seals for low volume sealed roads.
Robin Workman	TRL - Training Specialist (Training)	Specialising in provision of technical assistance to government departments, particularly in setting up of data and knowledge management systems for research centres and specialising in training experiences.

4. Deliverables and Activities

The key activities of this assignment are to:

- Conduct an in-country **needs assessment** based on consultations with local stakeholders, including the DMR;
- Prepare a **policy framework** to guide future transport research activities in South Sudan; and
- Prepare a **strategic plan** for the identification and implementation of priority research activities for the DMR in the short, medium and long term.

Definitions:

- A **needs assessment** is a systematic process for determining and addressing needs, or "gaps" between the existing situation and the desired condition. The aim is to fill a perceived deficiency. It is a part of planning processes that will help to clarify problems and identify appropriate interventions or solutions. By clearly identifying the problem, resources can be directed towards developing and implementing a feasible and applicable solution. Needs assessments are only effective when they are outcome-focused and provide evidence that can be used to determine which of the possible means-to-the-ends are most effective and efficient for achieving the desired results.
- A **policy framework** is a logical structure that is established to organize policy into categories that make it easier to find and understand the contents of various policy documents. Policy frameworks can also be used to help in the planning and development of the policies themselves.
- A **strategic plan** is the definition of a strategy, or direction, and the allocation of resources to pursue this strategy. In order to determine the future direction, it is necessary to understand the current position and the possible routes through which an organisation can pursue particular courses of action. The key components of 'strategic planning' include an understanding of an organisation's vision, mission, values and strategies.

The following deliverables will be provided as part of the project:

- Inception report
- Preliminary report
- Workshop 1
- Draft final report
- Workshop 2
- Final report

Six hard copies and an electronic copy will be provided of each report.

The project will also involve two stakeholder workshops in Juba for up to 30 people; the first workshop will discuss the draft Research Policy and the second the draft Strategic Plan. The attendee lists will be discussed with DMR and AFCAP, but will include representatives from the 10 States. The budget includes travel and subsidence costs for the invited participants, venue hire, audio visual equipment and catering expenses. It will be the responsibility of the liaison officer to disseminate details of the stakeholder workshops to all participants with sufficient notice and ensure that all participants attend.

Table 2 below summarises the project deliverables and milestones.

Table 2: Deliverables and milestones

Milestone	Description	Time after project commencement
1. Inception Report	Inception report including work plan and timetable, key issues and approach, minutes of inception meeting, list of documents to be reviewed and people to interview	2 weeks
2. Preliminary report	Initial findings, draft policy framework	6 weeks
3. Workshop 1	Presentation of draft policy framework to stakeholders	12 weeks
4. Draft final report	Finalised policy and draft strategy plan	14 weeks
5. Workshop 2	Presentation of draft strategic plan to stakeholders	16 weeks
6. Comments on the draft final report	Comments of in the draft final report to be received	18 weeks
7. Final report	Report including the finalised Policy and Plan taking into account comments will be submitted	19 weeks
8. Final sign-off by AFCAP management	AFCAP/DfID to sign off project report	20 weeks

The outline programme is as set out in the TRL proposal and a detailed programme will be included in the Preliminary Report.

5. Activities to Date

Meetings have been held with the people listed in Table 3 below. Unfortunately a meeting with the Engineering Council could not be arranged and it is hoped that contact will be made during the next mission.

Table 3: Stakeholders visited during the November 2013 mission

Name	Position	Organisation
Gabriel Makur Amuor	Under-Secretary	Ministry of Transport, Roads and Bridges
Jeremiah Turic	Director General	Department of Materials and Research
Philip Marlow Waiwai	Deputy Director of Roads Maintenance	Ministry of Transport, Roads and Bridges
Eng Lado Tongun Tombe	Director General, Road Transport & Safety	Ministry of Transport, Roads and Bridges
Emmanuel Longo	Transport Sector Development Plan Co-ordinator	Ministry of Transport, Roads and Bridges
John Kenyi	Deputy Director	Highways
Kenyatta Warille	Executive Director	South Sudan Roads Authority
Francis Magambe Byaruhenga	Technical Advisor	South Sudan Roads Authority
Dr James Bango	Dean	College of Engineering & Architecture, University of Juba
Matiop Kuol Reng	Materials Technician	Central Materials Laboratory
Garang Aguer John	Materials Technician	Central Materials Laboratory
Nick Hodgson	Programme Manager	UNOPS AFO-SSOC
Manoel Naronha	Project Manager	UNOPS AFO-SSOC
Million Ali Abate	Senior Project Engineer	UNOPS AFO-SSOC
Delelegn Mulat	Materials Engineer	UNOPS AFO-SSOC
John Pincock	Advisory Services	UNOPS AFO-SSOC
Alfred Gunther	Technical Advisor	European Union
Eng. John Khota	RSS Counterpart	Ministry of Transport, Roads and Bridges

The MTRB assigned a counterpart (Eng Khot), who has since departed to Japan for 4 weeks training, and also provided transport.

No office accommodation was required on this initial visit but facilities for subsequent visits have been promised at the location of the Materials Testing Laboratory.

Letters of invitation were provided for the issue of visas.

The meetings enabled the team to understand the current research and policy environment in South Sudan as well as receiving relevant documents:

- The Ministry of Transport, Strategic Plan 2013-18, April 2013
- The Ministry of Transport, Transport Sector Policy 2012-17, April 2013
- Pavement Performance Trial Section, Gumbo-Rajaf East Road, Briefer, UNOPS, November 2013

TRL will aim to secure copies of other relevant documents during the November 2013 mission and beyond.

The key issues identified during the mission, for which research may make a useful contribution or which may impact on the development of a road research centre and associated research programme, are listed below:

- Extent of the road network at present in South Sudan;
- The quality of highway construction;
- The quality and programme of maintenance of both trunk highways and feeder roads;
- The quality and availability of construction materials;
- The capacity of the relevant ministries as well as the proposed road research centre to undertake beneficial research;
- The ability to secure funding for research activities;
- The institutional arrangements under which a road research centre would operate;
- The criteria applied to setting priorities for construction and maintenance;
- The balance between trunk road and feeder road investment.

These issues will be developed and considered in more detail in the preliminary report.

6. Key Constraints and Risks

There are believed to be few constraints to delivering this contract per se. However, there are clearly likely to be various issues that might constrain future research initiatives and these will become clearer as the project progresses. Now that the TRL team has met and discussed the project with officials in South Sudan, we have every confidence that it will run smoothly. Nevertheless there are always risks when conducting any project and these are outlined in Table 4, with some mitigation measures to reduce the level of risk.

Table 4: Possible project risks

	Risk	Effect	Mitigation Measures
1	Inability to speak to all relevant local stakeholders	This could limit and delay the production of key deliverables	The visit in November 2013 has enabled contact that will be followed up later if necessary.
2	We do not get acceptance from a sufficient number of participants for the stakeholder workshop.	This could limit the content of and delay the production of key deliverables.	Contacts could be followed up later if necessary.
3	There is no institutional support for continuing the project in South Sudan once the AFCAP project has finished.	The RRC will risk not receiving funding and support to continue.	It will be important to obtain buy-in and support from the public sector in South Sudan. This can be achieved through publicity and directly through stakeholders to identify champions for taking the proposals forward beyond 2014.
4	Printed material is unavailable.	This could limit the content of and delay the production of key deliverables.	TRL will rely on interview material and follow up with key stakeholders if necessary.

On the basis of the experience gained from the November 2013 mission it is not anticipated that these potential risks will be a significant impediment to the delivery of the project.

7. Activity Schedule

Our methodology has been designed to achieve the following project objectives, as set out in the ToR:

1. Set out the case for road research and describe the benefits it can bring;
2. Explore funding avenues for road research;
3. Outline an appropriate institutional structure for a research centre within MTRB; and
4. Develop a road transport research policy and strategy for South Sudan.

This project will lay the foundations for the next phase of work, which will lead to the establishment of a road research centre for South Sudan.

7.1 Project inception

The first task will be to establish the requirements of MTRB/DMR for the project and agree the scope and methodology at the outset.

An essential component of the project is the partnership with the DMR. The consultancy team will provide the knowledge gained from many years undertaking research and recent experience in assisting African countries to establish an indigenous research capacity. However, it is the local counterpart organisation (DMR) and other organisations with links to the transport sector in South Sudan that are best placed to identify the problems and priority needs in the sector. Therefore it is of prime importance to the success of the project that the consultancy team are supported by committed counterpart staff in DMR.

In the initial meetings DMR have indicated a strong commitment to the project. A counterpart (Engineer Khota) has been assigned to the project together with a vehicle for use by the project team. Assistance with vehicle running costs (mainly fuel) when team members are in South Sudan will be met from the consultant's project budget.

7.2 Tasks

Many of the tasks (listed below) will be undertaken in parallel and aspects of the work combined, for example when interviewing stakeholders more than one topic can be discussed.

7.2.1 Become familiar with the main constraints facing the road sector in South Sudan and the range of existing reports, studies and research covering the sector

The project team are already familiar with many of the problems facing South Sudan, such as the lack of maintenance during the civil war, the security issues, inadequate institutional structures; impact of extreme weather and climate change; and a scarcity of good roadbuilding materials in large areas of the country. Some of these are specific to South Sudan, but other constraints are similar to those in neighbouring countries such as Ethiopia and Kenya.

TRL will expand our existing knowledge by reviewing the reports, standards, and research papers provided by the MTRB Liaison Officer. We also believe that capturing the knowledge and experiences of those working in the road sector in South Sudan is an important part of this task. Therefore the literature review will be supplemented by interviewing members of the MTRB and others within the road sector for their views on the main constraints.

7.2.2 Identify how road research is currently being undertaken in South Sudan, which subject areas are being covered, which institutions are involved and the funding sources

A desk study will be undertaken to collect and collate the relevant documents and analyse them. TRL will begin by undertaking a systematic review of the existing research roles, responsibilities and capabilities of the

stakeholders, including work carried out by South Sudan universities. Having been involved in road research in East Africa for a number of decades, TRL will also be able to identify studies that have been undertaken by neighbouring countries which may be relevant (the AFCAP programme includes both demonstration projects based on research conducted elsewhere and local research to solve local problems that are specific to a country's needs). This work will identify where there are gaps in knowledge and how future research should be developed. Establishing the funding sources for these existing studies could also provide ideas on potential sources of funding for future road research in South Sudan.

7.2.3 Identify the main needs for road research in South Sudan and where research is likely to have the greatest payoff

It is important that road research is directed towards the needs of the country as a whole, and the areas where it is likely to have the largest impact. For example, research could help to improve access to rural areas to support the agricultural industry, make trade routes to neighbouring countries more efficient and reduce road construction and maintenance costs.

There may be a number of "quick wins", where a small investment in research can produce a large benefit for the country in a short time period. These would also help to demonstrate the benefits of research to politicians, and encourage further support from funders. Experience from other countries such as Ethiopia, Mozambique and in Kenya, transforming the existing research facility into a semi-autonomous National Transport Research Centre, has shown that current research activities can help provide 'quick wins' and projects such as the trials currently being conducted by UNOPS and funded by USAID are one such example in South Sudan.

TRL will undertake a comprehensive needs assessment to identify the key research areas. These will form the basis for the structure of the research centre and a prioritised research programme. For example a material testing laboratory could facilitate research to make better use of local materials, and a quality control research group could investigate methods of controlling the quality of construction so that it is more resistant to seasonal flooding. We will also identify potential research partners to accelerate growth, and existing research priorities and topics which the centre could align with and build on.

The needs assessment will be carried out in conjunction with MTRB, so that the research programme aligns with their mandate. Topic areas will be identified through a dialogue with senior MTRB staff and the production of a series of 'research position papers' which present the arguments for particular strategies and choices. The topics identified will be refined from this dialogue to produce a 'research framework'. Within this research framework a priority research programme will be set out with a 10 year horizon and individual research projects. These will be defined and prioritised based on discussions with MRB and budget limitations. The proposed research programme will need to be cognisant of current and on-going research commitments, for which the other stakeholders will also be consulted. The sifting and screening processes for proposed research ideas will involve estimations of costs, benefits, timescales and targets, outputs and measures of success. These become more refined at each stage of sifting.

TRL/MTRB will identify and pilot the following requirements of this decision process:

- the data requirements;
- the presentation format;
- the 'dialogue' schedule; and
- the criteria for the screening process.

7.2.4 Identify current collaborative programmes of research in the transport sector of most relevance to South Sudan

Many issues facing South Sudan are common to other countries and collaborative research is an ideal way to pool resources and transfer good practice. It may also be possible to set up collaborative programmes of research with the newly formed road research centres in Ethiopia, Kenya and Mozambique or with universities in South Sudan and academic and research institutions elsewhere. One of the important benefits of establishing an indigenous research facility is that knowledge can be shared and accessed with these institutions both electronically and by attendance at international meetings and conferences.

In countries with similar social, economic and environmental issues to South Sudan, we have found that the following areas of research to be highly relevant in the transport sector:

- Accessibility (all-season), particularly for rural roads
- Appropriate organisational structure and management processes
- Exploitation of local materials for roadbuilding projects
- Needs of non-motorised transport and intermediate forms of transport
- Trade routes with other countries
- Freight costs
- Road management
- High incidence of road traffic collisions
- Inappropriate materials specifications which lead to excessive haulage costs
- Road construction costs
- Mechanisms for funding road maintenance, e.g. tolls, fuel taxes, road licences
- Domestic construction industry is under developed
- Overloaded vehicles
- Road safety
- Impacts of climate change

These issues can be used to determine programmes of research in the transport sector of most relevance to South Sudan.

The consortium will also use its international network of research contacts to facilitate this task.

7.2.5 Identify existing main domestic and international sources of research funding. Explore potential sources of funding for research

In order to identify sources of funding it will be necessary to make links and partnerships with potential funders. TRL has a wide knowledge of international funding bodies that may be willing to fund initial research projects, (e.g. through AFCAP) and will be able to assist MTRB in making the necessary links and contacts. However, a local long-term local commitment to funding is essential for the sustainability of any research centre, which will also need to prove itself as a credible and effective organisation.

There are some indications of a more strategic approach being taken by donors in making funds available to help build research capacity in the sector, rather than the more usual approach of transferring research knowledge and building capacity through projects. This will be taken into account when identifying potential funding sources, in order to make the funding more sustainable for the research centre.

Of the international donor agencies several have funded related projects in neighbouring countries. DfID, AFCAP and the World Bank have shown interest in supporting future programmes generally and particularly for South Sudan. The future programmes of these agencies will be studied and reported. There are also relatively new funding sources, such as the Adaptation Fund, set up to help developing countries become more resilient to climate change. Research into methods to improve the resilience of road infrastructure to increasing flooding and erosion could be funded through these sources.

Some proportion of funding can be generated locally if a laboratory testing facility is established for the Research Centre. In addition to commercial testing to the private sector, it could be possible for the research centre to provide a certification and calibration standard and service for all other laboratories in the country at some stage in the future. This possibility will be explored.

In the private sector, some private companies, for example those in the construction sector, might also assist in funding research. However, it is unlikely that transport operators, for example bus or freight companies - most of which are very small, could provide finance.

7.2.6 Examine the proposal to establish a Road Research Centre within the Directorate of Materials and Research and the role that relevant tertiary institutions should play in the research programme

The decisions around the establishment of a research centre will not be straightforward and will depend on a range of considerations around vision, scope, priorities, funding and institutional framework.

The key issue is to agree a clear 'brief' for the role and expected capacity of the research centre, and hence what level and quantity of skill-set will be required. This will be based on the review of the current activities and structure of MTRB and discussions on the expected role of the research centre. From this analysis we will assemble a general view of the areas where research effort is likely to be focussed and the level of resource that will be required. The proposed research will be analysed to gain an appreciation of future requirements, and to provide an idea of the roles the relevant institutions would play.

We can present alternative structures for the organisation of the research resources, based on our own experiences and those of other research bodies.

It would be beneficial to discuss the establishment of the research centre with the universities and explore a potential role for them.

7.2.7 Prepare a draft Road Transport Research Policy for South Sudan which places a strong emphasis on the mandate of DMR and is prepared to an appropriate standard ready for presentation to the Minister

TRL will draft proposals for a Road Transport Research Policy for South Sudan and discuss this with the MTRB. This will build on the previous tasks, taking into account the research needs identified and potential funding, the structure and facilities of the research centre, the potential for collaborative work and role of universities. The transport research policy needs to support the objectives of the South Sudan Government and align with the policy of the Ministry of Roads and Bridges. Therefore, the relevant South Sudan government documents will be reviewed as part of this task, and we will interview the relevant stakeholders.

The policy will need to address the problems identified in a co-ordinated way, setting out the framework for the Research Strategy. The draft policy will be shared with the stakeholders at a workshop, where it will be discussed and input sought on its relevance and priorities.

7.2.8 Provide guidance on the key 'next steps' for developing road research capacity in South Sudan, including the possibility of establishing a national training institution for laboratory personnel up to technician level

TRL will evaluate information collected during the previous tasks and identify the next steps for developing the road research capacity of South Sudan. Experience from similar projects leads us to believe that there is potential

for massive benefits from road research in South Sudan, but the logical next steps will be determined based on feedback from stakeholders and in liaison with MTRB.

It is likely there will be a number of considerations associated with the establishment and development of a research capacity in South Sudan. These could include:

- Scope of activities
- 1yr, 5yr, 10yr business plan and long term Vision
- Funding arrangements, including primary and auxiliary
- Sustainability of funding
- Institutional setting
- Patrons/leadership
- Reporting lines

Other factors that could influence choice of options include:

- Use of existing facilities/new facilities/combination
- Networking of existing sites/offices
- Difficulties associated with approvals for setting up an 'independent' establishment
- Disparate reporting and accountability if more than one Ministry involved

High quality and reliable laboratory testing is essential to the development of research capacity. There is no Materials Engineer in place at materials testing laboratory. Testing is carried out by technicians trained in Kenya. Basic soils and aggregate testing equipment is available. There is no equipment or capacity for testing bituminous materials. The consequences of this and other possible constraints on the capacity to undertake research due to a lack of skilled human resources and essential equipment will be dealt with in more detail in later reports. The existing laboratory testing capability will be assessed with a view towards establishing a national training institution for laboratory personnel, focussed on Technician level.

7.2.9 Prepare a draft Road Transport Research Strategic Plan for South Sudan, which is designed to achieve the policy objectives

A key activity for this project is to prepare the Road Research Strategy for South Sudan which would be designed to support the implementation of the research policy to be developed. In Africa the main role of research tends to focus upon the local characteristics of the country that will influence key decisions and modify or adapt existing models and procedures. Examples include:

- Local material properties for road building,
- The performance of road pavements in particular climatic zones,
- Appropriate solutions bearing in mind local economic and physical environment, cost structures, institutional set up etc.
- Analysis of traffic demand and forecasting of traffic volumes and modal split
- Axle weighing and control
- Road inventory and asset management systems
- Development of different interventions on road accident rates
- Analysis of transport costs and tariffs and road user charges
- The impact of transport investment on development and poverty reduction

- Examination of the rural accessibility and mobility.

From our experience of having worked for many years in road research projects in East Africa and elsewhere we can envisage that the Road Research Strategy could be based on examples cited above and addressed by the establishment of a road research centre. The draft strategy will be presented at a stakeholder workshop, where it can be discussed. Our expectation is that the organisation will start as a small unit that, as resources are forthcoming, develops into a research centre.

8. Responsibilities and contributions

In order to successfully deliver the project TRL will require the assistance of the DMR. In particular TRL will look to the DMR to:

- Facilitate meetings
- Arrange meetings
- Arrange transport in the Juba area
- Assist in the organisation of the workshop
- Contribute to the workshop

9. Next steps

The Preliminary report will be submitted to AFCAP by 13th December 2013 (6 weeks after submission of the Inception Report).

Given the likely impact of the Christmas vacations in South Sudan and the UK, it is anticipated that the first workshop will take place in Juba during the final week of January 2014 i.e. the week beginning 27th January.

The first workshop will aim to identify the needs, constraints and benefits of research in South Sudan and to elicit opinions from as a wide range of stakeholders as possible.

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