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Final Evaluation of the Rehabilitation of Trunk Road T1 from Zimba to Livingstone (Kms 30.00 to 72.80)

Letter of Contract No. 2013/320983

Final Evaluation Report

December 2013

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COORDINATES OF THE CONTRACT

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List of Acronyms

ACP	Africa Caribbean Pacific
AG	Attorney General
ALCP	Axle Load Control Programme
CBU	Copperbelt University
CCS	Cost Control System
CGC	China Geo Corporation
COMESA	Common Market for Eastern and Southern Africa
CP	Cooperating Partner
CRN	Core Road Network
CSO	Central Statistics Office
CSP	Country Support Paper
DCS	Document Control System
DEBS	District Education Board Secretariat
EAC	East African Community
EC	European Commission
EDF	European Development Fund
EIA	Environmental Impact Assessment
EIRR	Economic Internal Rate of Return
ESA	Equivalent Standard Axle (= 8.16 tonnes)
EU	European Union
FA	Financing Agreement
FDI	Foreign Direct Investment
FGD	Focus Group Discussion
FNDP	Fifth National Development Plan
FRA	Food Reserve Agency
FWC	Framework Contract
GDP	Gross Domestic Product
GRZ	Government of the Republic of Zambia
IDA	International Development Association
JASZ	Joint Assistance Strategy for Zambia
LFT	Logical Framework Table
MCT	Ministry of Communications and Transport
MDG	Millennium Development Goal
MFNP	Ministry of Finance and National Planning
MIS	Management Information System
MTR	Mid-Term Review
MTWSC	Ministry of Transport, Works, Supply and Communications
MWS	Ministry of Works and Supply
NAO	National Authorising Office of the European Development Fund
NCC	National Council for Construction
NEAP	National Environmental Action Programme
NOD	Nicholas O' Dwyer and Partners
NRFA	National Road Fund Agency
OO	Overall Objective
OVI	Objectively Verifiable Indicator
PEMFA	Public Expenditure Management and Financial Accountability
PEO	Provincial Education Office
PRE	Provincial Road Engineer
PRSP	Poverty Reduction Strategy Programme
QS	Quantity Surveyor

RCS	Road Condition Survey
RDA	Road Development Agency
RE	Resident Engineer
RF	Road Fund
ROADSIP	Road Sector Investment Programme
ROM	Results-Oriented Monitoring
RTFP	Regional Trade Facilitation Programme
RTSA	Road Traffic and Safety Agency
SADC	Southern African Development Community
SBS	Sector Budget Support
SME	Small and Medium Enterprise
SNDP	Sixth National Development Plan
SPSP	Sector Policy Support Programme
SPSS	Statistical Package for Social Scientists
SR	Supervisor's Representative
TA	Technical Assistance
TMD	Trunk Main and District
TOR	Terms of Reference
UN	United Nations
UNZA	University of Zambia
VOC	Vehicle Operating Costs
VOMS	Vehicle Operating Management System
ZAWA	Zambia Wildlife Authority
ZEMA	Zambia Environment Management Agency
ZHMS	Zambia Highway Management System
ZRA	Zambia Revenue Authority

1. EXECUTIVE SUMMARY

INTRODUCTION

The National Indicative Programme (NIP) identifies investment in the transport sector as one of the key areas for economic development and poverty alleviation in Zambia. The European Union (EU) reflected their willingness to support interventions in the road sector by allocating indicative resources of €90 Million under the 9th European Development Fund (EDF). The Country Support Strategies (CSS) for both the 8th and 9th EDF recognise the road sector as instrumental in attaining the two major EC aid objectives in Zambia, being:

- Fostering a sustainable economic growth and social development, with particular emphasis on the development of human resources and gender equality; and
- Alleviating poverty in accordance to the Zambia's Poverty Reduction Strategy Programme (PRSP).

The rehabilitation of 42.80Km of the Trunk Road T1 from Zimba and Livingstone, in the Southern Province, is consistent with the NIP and CSS agenda for providing quality roads to enhance the economic development of Zambia. Thus, the EU allocated €15 million of 9th EDF funds to support the co-financing of this project with the Government of the Republic of Zambia (GRZ). PLANET SA was awarded the contract to carry out this consultancy and a Commencement Order was issued on 18th September 2013. The title of the consulting services is **"FINAL EVALUATION OF THE REHABILITATION OF TRUNK ROAD T1 FROM ZIMBA TO LIVINGSTONE"** The Decision No. is: **FED/2007/019-642** and the CRIS Contract No. is: **FED/2013/320-983".** The final evaluation will provide the decision-makers in the Government of the Republic of Zambia*,* the relevant external co-operation services of the European Commission and the wider public with sufficient information to:

a. Make an overall independent assessment about the past performance of the programme, paying particular attention to the impact of the project actions against its objectives;
b. Identify key lessons and propose practical and sustainable recommendations for follow-up actions.

RELEVANCE

The project was wholly relevant to the needs of the Government of the Republic of Zambia (GRZ) and the aspirations of the EU/GRZ co-operation. The Logframe was attached to the FA but was not used as a Management Tool in the project, specific baseline data were not collected, and a detailed stakeholder analysis did not take place. The objectives and purpose were correctly expressed, but the means of measuring and evaluating trends were not considered to a great extent. The assumptions were well founded, and in summary:

- We believe that a competent Contractor and Consultant were employed and the project benefited from a stable workforce with few changes to the senior personnel.
- The assumption was made that competent project management staff would be appointed both at the Road Development Agency (RDA) and the National Road Fund Agency (NRFA). The Road agencies recruited staff; however, there was an extremely high turnover of senior management, which was detrimental to the administration of the project.
- Costs of oil and bituminous products have continued to rise over and above the normal inflation rates
- Routine maintenance contract tenders are being launched for the Zimba to Livingstone Road. Periodic maintenance has not been carried out on the Monze to Zimba road, although the road was completed in 2003.
- There is a new weigh station at Livingstone (constructed in 2010) and it appears to be functioning well; however overloading is still prevalent and many challenges remain, including the need to prevent overloaded vehicles using side-roads to avoid the

weighbridges, and also to eliminate the reported practice of off-loading goods to other vehicles in the vicinity of the stations.

A common design problem is that of low Engineer's Estimates which have led to changes in the scope of works and funding, and the Zimba to Livingstone road is an outstanding example of a project where there was a huge difference between forecast and actual costs. In this case, between preparation of initial estimates in 2003/04 and commencement of works in 2009, there was firstly a major general increase in road construction costs, triggered partly by large rises in the price of fuel, and secondly continued deterioration of the road, which was greatly accentuated by unusually heavy rains in the 2007/08 season. It is also relevant to note that the Financing Agreement (FA) was conceived as a result of unutilised funds of □15m being available which would otherwise have been lost to Zambia, and it was not based on an updated road design.

EFFECTIVENESS

The central and land-locked position of Zambia poses a high demand for an improved and sustainable road infrastructure network, both within the country and linking to the rest of the region. The project was lacking in its approach to social and environmental management, as these were not seen as the priority at the time. The road project happened against a backdrop of institutional change, which is on-going. The RDA, NRFA and Road Traffic Safety Authority (RTSA) have undergone a process of organisational change and institutional reform. Currently RDA is under the auspices of the Office of the President. The works tender was not very competitive for a variety of reasons, and the situation was not conducive to ensuring the best value for money.

The project implementation was overshadowed by a debate between the international donor community and GRZ, following a series of audits looking into recent major road development projects in Zambia. The Attorney General's (AG) audit of the RDA for the years 2006 to 2009 concluded that:

- There was a serious over-commitment and inadequate budget provision for contracts
- The quality of contract documents was poor
- Consultants were appointed late
- There was poor contract administration
- There were many instances of delayed payments and poor quality of works.

The EU financial audit was commissioned partially as a response to the GRZ audit. The EU commissioned a procurement and technical audit of roads projects managed by RDA in 2008. The agencies were found substantially compliant with the corrective measures proposed in the AG's Audit, and several best practices were recommended in terms of procurement guidelines. With respect to environmental issues, there was no detailed EIA carried out and the Contractor was required to prepare an EIA for the approval of ZEMA as required in the technical specifications for the works contract.

The project has achieved the Project Purpose, which was to contribute to the establishment of a safe and sustainable national road network achieved by the end of ROADSIP II (2013) by removing a serious bottleneck in Southern Africa's road network.

EFFICIENCY

The activities envisaged in the FA and Rider are as follows:

Budget Item	**Amount (€)**	**Rider No 1 (June 2009)**	**Reallocation**	**Final Budget Breakdown**
Works	12,630,000	11,917,000		11,917,000
Supervision	1,000,000	1,650,000		1,650,000

Evaluation	50,000	50,000	+30,000	80,000
Audit	20,000	20,000	+260,000	280,000
Sub-total	13,700,000	13,637,000		13,977,000
Contingencies	1,300,000	1,363,000	-290,000	1,073,000
Total	**15,000,000**	**15,000,000**		**15,000,000**

The FA was signed in April 2006; however, the tender for the rehabilitation of the entire road section launched in 20008 was unsuccessful because all tenders received were administratively non-compliant. Due to the heavy rains of 2008/09 which worsened the state of the already damaged road, RDA decided to tender and award a contract for the first 30km to China Geo Corporation (CGC). This contract was entirely funded by the GRZ and completed in December 2009. The tender for the remaining 42Kms which was launched in January 2009 and co-financed by the EDF and GRZ received only 2 bids and the resulting civil works contract was also awarded to CGC, having met the administrative and technical evaluation criteria. The revised tender price was □35,520,248.58, which was 32.6% (□11,58m) funded by the 9th EDF and 67.4% (□23.94m) funded by GRZ. The original performance period for the civil works was 18 months, commencing on 11th April 2009. The civil works progressed well and extension of time was granted due to excessive rainfall and additional works at the Police Checkpoint and weighbridge area, and final acceptance was granted to the contractor on 29th June 2012 after the expiry of the maintenance period.

The service contract for supervision of works was awarded to Nicholas O' Dwyer and Partners (NOD). Prior to the commencement of the supervision services, NOD was awarded a complementary services contract for Design Review. Seven (7) liaison meetings and 23 No Site meetings were held, whereas 21 No. Monthly Progress reports were prepared and distributed. A Framework Contract (FWC) for the Technical Audit of the project was concluded with M/s OVE Arup and Partners International, and five (5) audit missions were carried out. In general the Audits provided confirmation that correct procedures were in place and on occasion made recommendations for improvements, which were then verified in subsequent audit missions. The EU commissioned a Financial Audit of the works and service contracts, which was undertaken by Moore Stephens. The findings confirmed that the project finances were being managed responsibly. Results Oriented Monitoring (ROM) was carried out on one occasion in 2010.

In general the project was deemed to be within time and budget, which is quite rare in projects of this nature. The works were well managed and there were no claims due to unforeseen conditions. Although the works tender did not attract many bidders for a number of reasons, and costs had increased drastically over the years, it is considered that the cost per kilometre is comparable to recent cost estimates for works of a similar nature in Zambia. There can be no doubting of the commitment of GRZ in terms of providing finance for the project; however there were upheavals in the institutions due to the removal of senior personnel. Given the seriously deteriorated state of the road by the commencement of works in 2009, it can be stated that the works performed were good value for money, although the amount now requiring to be spent had been significantly increased by project implementation delays, including those caused by failure of the first tendering procedure.

IMPACT

The following are tangible, positive impacts to which the road rehabilitation has contributed:

- Construction quality is high and the road has contributed to development in Livingstone.
- There are new hotels and lodges in Livingstone and new facilities such as an airport terminal, inter-city bus station and market. These were built after the road construction, which obviously facilitated of materials and personnel.
- The growth in traffic has exceeded expectations, being approximately 10% per annum since the construction of the road.

- Travel time between Zimba to Livingstone has reduced from approximately 3 to 1 hours since before the project start in early 2009 to after the project completion in late 2011.
- There has been an increase in local trade due to easy access to markets.
- There is an increase in revenue due to the high increase in commercial traffic. This was confirmed by the Zambia Revenue Authority in Livingstone due to the higher tonnages being transported and greater numbers of transactions however a detailed breakdown was not provided.
- There is increased revenue for Kazungula District Council as a result of increased cross-border traffic. Revenue from border tolls has increased from K800,000 in 2010 and is expected to exceed K1,200,000 in 2013.
- There is an increase in the numbers of tourists, particularly local ones, and removal of the former reproach that the road was said to give Zambia a bad image. The Ministry of Tourism in Livingstone confirmed that domestic tourism has risen rapidly and that the number of beds available in Livingstone had risen to 2,000 from approximately 1,500 five years ago. Actual tourist numbers were not available however.
- There has been a revival of the Chamber of Commerce in Livingstone.

Some negative impacts have also been recorded as follows:

- Vandalism of road furniture continues to be a challenge for the authorities. For example the recent routine maintenance contract allows for the replacement of 12 No. road signs that have been vandalised since 2011. The cost is not huge but there is a negative impact on road safety as a result.
- There is an increase in the number of traffic accidents caused by over-speeding. Although attempts to obtain recent accident data for the road from the Zambia Police were unsuccessful, several respondents in the project area mentioned an increase in road accidents since the works were completed, attributing this to the much higher speeds now being achieved by vehicles. The increase in the number of people being hit by speeding vehicles was highlighted in the focus group discussions as one of the negative impacts that have arisen from the rehabilitation of the road.
- The Contractor did not abide with his perceived responsibilities to the community in terms of environmental issues, which has resulted in some community members being aggrieved. Over-abstraction of water led to the drying up of the Natebe dam, one of the main sources of water for surrounding communities. This negatively affected farmers growing vegetables in the area. In Mubiana village, the local dam walls burst due to the blocking of the spillway in a bid to abstract water by the Contractor. In most cases the community reported that the sand, borrow pits and dam left by the Contractors have provided breeding ground for mosquitoes. Senkobo villagers complained of respiratory illnesses – which were caused by the open borrowpits left by the Contractor. Mubiana and Natebe dam communities complained of reduced agricultural output as a result of the bursting of the walls and poor land use practices respectively.

Other impacts not necessarily due to the road construction have been noted as follows:

- The shift of the Provincial Headquarter to Choma from Livingstone will have a negative effect on some businesses
- There has been an influx of villagers into Livingstone, which has stretched the capacity of the social services.

The monthly HIV/AIDS awareness campaigns increased the interaction with the local communities, which was positive. There is need for better prescription of environmental and social activities in the contract documents. An extension was awarded to the Contract B for the construction of City Roads. In addition 21 roads were upgraded to the heavily populated compound areas in order to also bring benefits to the poorer residents of Livingstone. The percentage of females employed on the project was relatively low (3 to 5%).

The 2009 Office of the Auditor General's audit revealed major over-commitment, weak design and supervision, poor contract management, and systematic over-engineering of the Core Road Network (CRN) rehabilitation by the Road Development Agency. The EU duly suspended the final Sector Policy Support Programme (SPSP) 1 disbursements, as well as the launch of SPSP2, pending corrective measures by GRZ.

SUSTAINABILITY

The key stakeholders in the road sector in Zambia are the management and staff of the RDA and NRFA in addition to Contractors and Consultants from the private sector. Road users are represented on the Boards of these agencies. Stakeholders include Government as a whole, farmers and businesses along the road, the tourist sector, and the residents of Livingstone and the whole road's hinterland up to Zimba. Road improvement and maintenance in Zambia is co-ordinated through a donor-assisted Road Sector Investment Programme (ROADSIP). Under the Country Support Strategy (2008–2013), donor and national policy converged in respect of the important EU goal of supporting the ROADSIP II Programme.

The importance of Axle Load Control has been recognised and a review in 2009 concluded that the programme was generally satisfactory, although procurement and installation of weighbridges were unsatisfactory due to delays in land acquisition and cost overruns for equipment and site works. A check at the weighbridge in Livingstone revealed that heavy traffic has increased from 3 to 4,000 trucks per month in both directions to approximately 6,000 since the construction of the road. Road condition surveys (RCS) are undertaken on an annual basis through a consultancy contract. There is a need to feature road safety measures more prominently on the agenda of RDA and the traffic rules and regulations enforcement agencies. New roads of comparatively high standard typically bring the vice of over-speeding, which is a major cause of accidents, and many of these are fatal.

A recent study carried out by the European Court of Auditors concluded that investments in the roads sector were not sustainable, due to a lack of funding by Governments in the region towards maintenance and a general lack of enforcement of overloading regulations. According to a sector review, one of the main deficiencies of the road sector has been the neglect of higher education and vocational/artisanal training related to road construction. The economic analysis at the feasibility stage indicated an economic internal rate of return of 23.0%. The final cost was €850,000 per km, representing an increase of in excess of 300% over the envisaged unit value in 2006. Studies have demonstrated that there is an attractive rate of return to be realised from investment in the North–South Corridor.

The emphasis of ROADSIP has been on the upgrading of the paved network, and there has been less emphasis on maintenance and on feeder roads as a result. A core road network of 40,113 km (Ref ROADSIP II 2003 – 2013) has been identified as being the minimum road network needed to be effective in combating poverty through improved accessibility, connectivity and job creation. Sustained and timely funding of routine and periodic maintenance of the CRN is of fundamental importance. There is an opportunity in future projects to utilise the opportunities for interaction with communities, and implement road safety and gender awareness programmes.

COHERENCE AND VALUE ADDED

The rehabilitation of the Zimba to Livingstone road was an expressed priority for both EU and GRZ and it complements the previous rehabilitation of the Monze to Zimba road and the Kabwe to Kapiri road (T2) also funded by EU under the 8th EDF, the support to the institutions through the 8th EDF, and the sector budget support during the 9th EDF. Under the 9th EDF a programme of periodic maintenance of trunk, main and district roads was implemented, and a programme of maintenance and rehabilitation of feeder roads had also commenced, but was unfortunately curtailed when the funds were suspended. The EU has also provided

support to the upgrading of the museum and airport. The other focal sector of the 9th and 10th EDF is Capacity Building, which is complementary to the EU support of the road sector.

There is a donor coordination forum in the road sector, and the EU held the chair as the lead donor during the implementation of the Zimba to Livingstone road. Traditional Cooperating Partners (CP)s such as DANIDA and KfW are exiting from the road sector. Meanwhile the new entrants to the sector include China and the Development Bank of Southern Africa (DBSA), which currently dominate the additional finance to GRZ. The CPs requested that the Government implement a series of short and long-term measures to improve the governance of the roads sector. Short-term measures were made; however, GRZ has not responded up to now to the request for long-term measures. The RDA has been placed under the Office of the President, which effectively means that it cannot be audited in the manner requested by the CPs. Other requested interventions included the updating of the transport policy, the setting aside of adequate funds for maintenance and implementing studies on institutional change, and regular progress reporting. The implication is that 9th EDF funds will be de-committed by the end of 2013 (expiry of 9th EDF FA). Two tranches of funding for budget sector support are available in the 10th EDF; however these are unlikely to be disbursed. Zambia was the first ACP country where Sector Budget Support (SBS) was introduced as the new financing modality for the road sector. It was an experiment for both GRZ and EU. The choice for SBS as the dominant financing modality responded well to the Paris Declaration on Aid Effectiveness (2005) and EU policies on Effectiveness of Aid. A review of the SBS carried out by the Overseas Development Institute/Mokoro in 2011 highlighted the difficulties of such an approach in the Zambian context and subsequently the budget support to the road sector was suspended due to the failure of GRZ to meet performance indicators. The reclassification of Zambia as a lower middle-income country in 2011 has propelled an improved economic environment. Therefore, despite the fact that the EU remained the major contributor of BS, the financial leverage of General BS diminished, with Zambia becoming less aid-dependent.

VISIBILITY

Initially the project signboards erected were not suitable and it was decided to replace them. It would have been preferable if these had been approved at an early stage of the design. Many advertising hoardings were removed through the contract at the approach to Livingstone. If new signs are to be re-erected they should follow strict guidelines.

OVERALL ASSESSMENT

The construction of the road was a high priority for both EU and GRZ as it comprised a small but very important link in the main North-South network linking Dar es Salaam through Zambia to the borders of Victoria Falls, Kazungula and Katima Mulilo. It was unfortunate that the preparation stage took a long time, particularly due to an initial failed tender, which delayed the procurement process. This also highlighted the shortage of funds, which can be ascribed to the high level of deterioration of the road before construction, the lack of responsiveness of bidders at the time, and the increase in the costs of inputs for road construction. There has been a substantial increase in traffic and despite the increased costs, the economic viability of the road has been confirmed (see Section 3.1.4), assuming that levels of routine and periodic maintenance are sufficient to sustain the investment in good condition. One of the positive aspects of this project has been the fact that GRZ raised the necessary funds through its own resources to enable the project to be completed, albeit by means of two separate contracts. Another positive aspect is the quality of the road, which is currently considered the ‘best in Zambia’ and which has followed the construction of the Monze to Zimba link in the early 2000s, which is also considered to be of high quality. Whether this can be maintained will depend on the level of funds assigned to timely routine and periodic maintenance. Some of the signs are promising in this respect, with contractors already visibly engaged in routine maintenance activities. There must, however, still be some

concern that sufficient and timely levels of periodic maintenance might not be achieved in future.

There has been a tangible development in the City of Livingstone in the last 3 years. Although the construction of the road link cannot be wholly responsible, we believe it to be partially responsible. The road was constructed during a time of institutional changes for GRZ, and of policy change by the EU. The Road Sector Institutions have experienced many changes of personnel; donor relations have been strained at times; the EU will be shifting its focus from the transport sector; some other donors are also moving out of the sector, and others have moved in. New plans will need to be developed to suit the new circumstances.

Irrespective of these developments, it is of fundamental importance that the Road Sector is properly managed, that regular condition surveys and traffic counts are carried out, and that programming for annual workplans and budgets is carried out. It is also fundamentally important that adequate funds are set aside for road maintenance, and that the roads are protected from overloading. Hopefully the situation can settle and improve after recent upheavals.

CONCLUSIONS AND RECOMMENDATIONS

Recommendations have been derived from the conclusions and the main ones have been grouped together as follows:

Lessons Learnt

1) The interaction with the local communities was limited. Consider expanding the HIV/AIDS campaigns to include road safety, gender and environmental awareness activities
2) The use of road studs was piloted successfully and should be expanded to other trunk roads
3) Police checkpoints require room for off-road parking and filter roads at weigh stations need to be able to accommodate vehicle break-downs. Other aspects of the designs should be replicated elsewhere
4) Where possible, additional works should be considered at an early stage of the project. In this project late approval of additional works led to extension of time that may not have been necessary
5) Allow a separate budget line for visibility requirements – in this contract some visibility measures were incorporated after the detailed design as a variation to the contract
6) Cost estimates should be updated periodically and reviewed prior to tender for construction; in this case costs per kilometre actually incurred in 2009-11 were well over three times higher as those estimated by consultants in 2003/04 (see Section 3.1.4)'.
7) The responsiveness to bidders to the tender was disappointing. Measures can be implemented to ensure greater compliance with tender regulations and thus improve the responsiveness of bidders (eg pre-bid workshops to be co-hosted by the EU and NAO)
8) Detailed Environmental Management Plans should be incorporated into the contract documents – this contract was lacking in the level of detail
9) There is a need for greater clarity on the mode of application of Duty and VAT exemption as this issue proved a challenge in this contract.

Future Considerations

1) Adequate provision for maintenance, including preventive seals and overlays, should be programmed in order to protect the investment in the coming years
2) Road safety deserves greater attention and safety audits should be carried out at the design stage and following construction

3) A concerted effort should be made in future projects to use the Logframe as a management tool during implementation and to collect baseline data for monitoring purposes
4) A standard and safe carriageway width should be adopted for the major Road Corridors
5) Community interaction should be more meaningfully integrated into the logic of the programme. Community engagement allows people in the affected areas to be part of the decisions and activities, and it allows for their voices to be heard. This facilitates the identification of community-specific needs, a useful process in developing strategies to address these needs during programme implementation and to locally sustain efforts derived from the programme.
6) The RDA should continue the good work in implementing the axle load programme and overcoming the challenges that arise
7) Future TA programmes should assist in improving the capacities of learning institutions
8) The RDA programme has concentrated on the expensive paved network at the expense of the unpaved network, which may not be sustainable. A more balanced approach and the use of Output and Performance Based Contracts could represent a cost-effective means of reducing poverty
9) The re-seal of the Monze to Zimba road was observed on the field trip still not to have been carried out over ten years after substantial completion in 2002, as against an original feasibility study recommendation for a reseal after seven years
10) There is a need for capacity building in the District Authorities to enable them to administer road construction in their districts. Alternatively RDA should provide greater oversight for urban road upgrading.

2. INTRODUCTION

2.1 Background

PLANET SA was awarded the contract to carry out this consultancy in August 2013. The title of the consulting services is **"FINAL EVALUATION OF THE REHABILITATION OF TRUNK ROAD T1 FROM ZIMBA TO LIVINGSTONE (FED/2007/019-642)".** The evaluation study responds to the requirements of the last phase of the project cycle. The consultants shall verify, analyse and assess in detail the issues outlined in Annex 2 of the Terms of Reference (TOR) "Layout and structure of the Final Report". The issues refer to the five evaluation criteria endorsed by the OECD-DAC (relevance, effectiveness, efficiency, sustainability and impact), and to the EU-specific evaluation criteria such as EU added value and coherence.

A kick-off meeting was held on Monday 30th September 2013. Documents and files were reviewed and interviews held with the primary stakeholders. An Inception Report was submitted on 3rd October and a Desk Phase Report on 7th October. Thereafter the entire team carried out field activities along Zimba to Livingstone and interviewed District and Provincial stakeholders. Further meetings and data collection took place in Lusaka together with report writing, culminating in the submission of this draft evaluation report on 21st October 2013, in preliminary form; and on 25th October 2013, in final form.

2.2 Objectives of the Assignment

The final evaluation, which has been foreseen in the Technical and Administrative Provisions of the project's FA, will provide the decision-makers in the GRZ, the relevant external co-operation services of the EC and the wider public with sufficient information to:

a. Make an overall independent assessment about the past performance of the programme, paying particular attention to the impact of the project actions against its objectives
b. Identify key lessons and propose practical recommendations for follow-up actions.

2.3 Purpose of the Draft Final Evaluation Study

This Draft Final Evaluation Report is issued in accordance with the reporting requirements in the TOR issued by the Client. According to the TOR, the Draft Final Evaluation Report should be a maximum of 50 pages of main text, excluding annexes, using the structure set out in Annex 2 of the TOR. Besides answering the evaluation questions, the Draft Final Evaluation Report should also synthesise all findings and conclusions into an overall assessment of the project/programme. The Draft Final Evaluation report should be submitted 5 working days before the seminar where it will be presented.

2.4 Structure of this Report

This report consists of separate sections as follows:
Section 1 - Executive Summary – This is a short (five page) summary of the key findings, main conclusions, lessons learned and specific recommendations.

Section 2 - Introduction (this chapter) - provides a general background to the study together with the study objectives and purpose of the draft evaluation report.

Section 3 - Answered Questions/Findings – this chapter presents evaluation questions and answers, according to the evaluation criteria of relevance, effectiveness, efficiency, impact and sustainability together with an assessment of coherence and added value specific to the Commission.

Section 4 - Visibility – this chapter provides an assessment of the project's strategy and activities in the field of visibility, information and communication, the results obtained and the impact achieved.

Section 5 - Overall Assessment - this chapter synthesises all answers to evaluation questions into an overall assessment of the project/programme and prioritises the findings, conclusions and lessons.

Section 6 – Conclusion and Recommendations - this chapter introduces the conclusions in order to provide an overview of the assessed subject. This can be an important reference for the design of a new intervention.

Finally the Report contains annexes as follows:

Annex I	Terms of Reference of the project
Annex II	The names and CVs of the evaluators
Annex III	Report's Methodology
Annex IV	Logical Framework matrices (original and improved)
Annex V	Map of project area
Annex VI	List of persons/organisations consulted
Annex VII	Literature and documentation consulted
Annex VIII	Other Technical Annexes
Annex IX	Debriefing Summary
Annex X	DAC summary

3 ANSWERED QUESTIONS / FINDINGS

3.1 Problems and Needs (Relevance)

TOR Extract
The extent to which the objectives of the development intervention (projects/ programme) are consistent with beneficiaries' requirements, country needs, global priorities and partners' and EC's policies.

3.1.1 Policy and programme framework

Q. The extent to which the project has been consistent with, and supportive of, the policy and programme framework within which the project is placed, in particular the EC's Country Strategy Paper and National Indicative Programme, and the Partner Government's development policy and sector policies?

EU Context
EDF support for Zambia's infrastructure development has been considerable (approximately €170 million in EDF 8 and 9) and applied in most sub-sectors (roads, aviation, port development). Until EDF 9 this was always in the form of project aid, but in the process of implementing EDF 9 and taking into account the conclusions of the general evaluation of European Commission (EC) interventions in the transport sector (May 2004), it became apparent that the new transport sector policy, new institutional structures and improved functional arrangements suggested that a sector approach was warranted. A Sector Policy Support Programme (SPSP) was piloted since 2005 in support of ROADSIP II with the specific intention of supporting public expenditure in road rehabilitation and maintenance.

The 9th EDF infrastructure programme was increased by including the funding of the Zimba – Livingstone road project. At the time of the intervention, the road was the only section of the entire corridor connecting Zambia with Tanzania at Nakonde, with Zimbabwe at Victoria Falls and Botswana and Namibia and the Atlantic coast including the port of Walvis Bay, which was deemed to be in poor condition. The project was a continuation of the Monze to Zimba road, which was also EC-funded (8th EDF) and completed in 2003.

The 10th EDF Country Strategy Paper (CSP) and National Indicative Programme (NIP), 2008 – 2013, continued this support and identified Regional Integration and Transport Infrastructure as a focal sector. This support was based on an overall objective of contributing to economic development and poverty reduction through enhanced national and regional transport sector performance. One of the key results of the intervention was expected to be 'full implementation of the ROADSIP core national paved and unpaved road network improvement and maintenance programmes'.

Accordingly the EDF support has recognised the road sector as crucial in attaining the EC aid objectives of fostering a sustainable economic growth, social development and poverty alleviation in accordance with Zambia's Poverty Reduction Strategy Programme - (PRSP).

Government of the Republic of Zambia (GRZ) Context
The Zambian road network has 37,000 km of gazetted roads and 30,671 km of ungazetted roads. Of the gazetted roads, 17.5% (6,476 km) have an asphalt surface, 23.0% (8,478 km) are gravel and 59.5% (21,967 km) are earth. The bulk of the formal road network was constructed during the first decade after Independence, and gradually deteriorated owing to the lack of adequate maintenance through to the mid-1990s. Improvement of the road sector was identified in Zambia's PRSP in 2002 as the single most important means to address and

combat poverty. A core road network of 40,113 km has been identified as being the minimum road network needed to be effective in combating poverty through improved accessibility, connectivity and job creation.

The National Transport Policy (2002) and Road Sector Policy (2003) of GRZ both define the road transport sector as the most important driver for poverty reduction. It is considered that the recent Sixth National Development Plan (SNDP) (2011-2015) provides a better reflection of the goals and strategies of the National Transport Policy than the previous Fifth National Development Plan (FNDP). The strategic focus of the SNDP is, therefore, to address the constraints of infrastructure and human development. In order to reduce the high poverty levels in the rural areas and promote rural development, focus will be on stimulating agriculture productivity and promotion of agro-businesses, improving the provision of basic services such as water and sanitation, health, education and skills development. In addition, investments in key economic infrastructure such as feeder roads, water canals, tourist access roads and electricity access will be undertaken. The SNDP will also entrench crosscutting issues of Governance, HIV/AIDS, Gender, Disability, Nutrition, Environment and Disaster Risk Management.

The Road Sector Investment Programme (ROADSIP) II in particular, articulates the overall objectives of the sector investment programme as follows:

- Rehabilitation/periodic and routine maintenance of the core road network of 40,113km through various funding agencies
- Improve road condition for Trunk, Main, District, Primary feeder roads, Tourist roads and selected Urban roads through full and accessibility improvements as per “need” and priorities
- Institutional strengthening of the construction industry through appropriate approaches
- Create employment opportunities through appropriate road interventions
- Improve road safety as per Road Safety Action Plan
- Improve environmental management by building capacity
- Improve rural transport mobility through road improvements
- Improve management of community roads through the Road Development Agency and
- Address poverty and HIV/AIDS countrywide through respective national programmes.

The Zambia Link 8000 is the current programme guiding road development in the country.

Zambia is a member of both the Southern Africa Development Community (SADC) and the Common Market for East and Southern Africa (COMESA). As a member of the regional COMESA, Zambia participates in the discussions on the establishment of the Customs Union. Zambia is also participating in the SADC Preferential Trade Agreement and is a participant to the various transport protocols.

Cooperation Framework

The cooperation framework was based on the EU/ACP objectives of poverty reduction, sustainable development and the gradual integration of ACP countries into the world economy. The cooperation was aligned to the aspirations of the FNDP and later the SNDP 2011 – 2015, and also took into consideration the activities of the cooperating partners in Zambia under the auspices of the Joint Assistance Strategy Zambia (JASZ). The purpose of the JASZ is to harmonise and align the assistance provided by cooperating partners to support the implementation of Zambia's national development goals. The JASZ should be the appropriate instrument with which to progress towards further harmonization according to the requirements of the Cotonou Agreement and the EU development strategy. This is in line with the 2005 Paris Declaration, to which Zambia and its cooperating partners are signatory.

The framework is consistent with the European Consensus on Development, with its emphasis on country ownership and aid effectiveness, and focus on attaining the Millennium Development Goals (MDGs) and democratic governance. The JASZ was signed following the launch of the FNDP.

Conclusion
Clearly, on the policy statements level, there was no shortage of good intentions and the project was wholly relevant to the needs of GRZ and the aspirations of the EU/GRZ cooperation.

Although the 9th EDF design was the correct response to the actual needs, several road sector governance issues affected the implementation of the programme negatively. The EUD/NAO felt obliged to apply disbursement sanctions in such a way that the dominant Trunk, Main and District (TMD) roads component remained unaffected, at the cost of the rural road works volume, supporting the GRZ bias in favour of (paved) TMD roads. The decision in the Public Roads Act of 2002 to transfer the overall responsibility for the whole road network to RDA (under the Ministry of Works and Supply (MWS) has in some ways usurped the responsibility previously held by the Ministry of Local Government and Housing and can be considered contradictory to the Decentralisation Policy.

More recently, the RDA has been announced to be under the auspices of the Office of the President. There is a lack of an overarching policy document and ROADSIP has not served this function in recent years. A Board Chairman is in place however the Board itself has not been appointed.

3.1.2 Quality of analyses of lessons learnt

Q. The quality of the analyses of lessons learnt from past experience, and of sustainability issues?

It was stated in the FA that past experience of road rehabilitation projects, as confirmed by the evaluation of two EDF funded road projects in Zambia, pointed to the low priority given to road maintenance and that most rehabilitated roads fail before the end of their design lives. These evaluations were those of the Monze-Zimba Road, (ASCO (Z) Ltd, 2003) and Kabwe-Kapiri and Chisamba Roads, (Kiran and Musonda, 2004). This inability to apply the necessary road maintenance needs has inevitably led to rapid deterioration of roads and high vehicle operating costs.

Historically, many of Zambia's main trunk roads (and those of other countries in the region) have experienced repeated 15-20 year cycles of major rehabilitation or reconstruction, followed by degradation leading to the need for repeated major rehabilitation works, involving great disruption to the normal flow of goods and passenger traffic at these times of major road works. This situation has been exacerbated by steady traffic growth, by inadequate routine and periodic maintenance and by the persistent overloading of goods vehicles, despite the installation of weighbridges along with other measures designed to prevent overloading.

The economic feasibility study and design of the Monze to Zimba road was conducted on the basis that a re-seal would be applied after 7 years, however the road has been complete for 10 years and this has not happened as originally planned. Signs of early distress are already apparent in some places; for instance incipient rutting of the road was observed in Choma during the current evaluation.

It was acknowledged during the project preparation that overloading was a major problem; however, the Government was known to be implementing an Axle Load Control Programme and the assumption was made that this would be effective and that adequate funds would be

set aside for maintenance. In practice, funds have been set aside for routine maintenance and it was noted during the evaluation that contracts were due to be let. Substantial funds will be required for periodic maintenance, which will be due in 2018.

3.1.3 Coherence with current/ on going initiatives

Q. The project's coherence with current/on going initiatives?

The country's trunk road network provides a bedrock for economic development by carrying the greater part of the country's goods flows. It is also relevant to the Country Strategy's focal sector goal of regional integration and, in the agriculturally rich Southern Province, to the non-focal sector goal of food-security and agriculture diversification.

Funding from the EU and other donors/lenders in the road sector is coordinated through the Road Sector Investment Programme (ROADSIP), the first phase of which ended in December 2003. ROADSIP II was subsequently extended to the end of 2013. Donors convene under the JASZ. At the time, the EU played a lead role in the sector and active donors included DANIDA, World Bank, ADB, JICA, Kfw, and the Kuwaiti Fund.

Within ROADSIP, the 8th EDF funded the rehabilitation of two sections of the corridor between Tanzania and Walvis Bay or Durban and Port Elizabeth. These are: Kabwe – Kapiri Mposhi (trunk road T2) and Monze – Zimba road (trunk road T1), which is the adjacent section to Zimba – Livingstone. A feeder road rehabilitation project in the Copperbelt region and institutional support to the former Roads Departments were also implemented under the 8th EDF. The EU also provided support to the upgrading of the airport and museum and water and sanitation in Livingstone.

Interestingly, at the time of formulation of the Zimba-Livingstone project, the EU member states queried whether feeder roads would be upgraded through the project. Funding was not availed for feeder road development; however KfW have been implementing a feeder road programme in Southern Province, which is on-going. In addition GRZ has employed Contractors to upgrade the city and township roads in Livingstone.

Under the 9th EDF a programme of periodic maintenance of trunk, main and district roads was being implemented; however, due to perceived mismanagement in the sector, the sector budget support programme was suspended in 2008 and has not resumed since.

3.1.4 Quality of logical framework matrix

Q. The quality of the problem analysis and the project's intervention logic and logical framework matrix, appropriateness of the objectively verifiable indicators of achievement?

A Logframe was attached to the Financing Agreement (FA). It was not referred to very often in the management of the project and the only amendment made was to the budget lines, whereby funds were removed from the contingencies to expand the provision for evaluation and audit. It is noted that the result remained at the rehabilitation of '72km' although in practice the funds were sufficient for the co-financing of '42km' only. The following is a preliminary analysis of some of the parameters of the logframe:

Objectively Verifiable Indicators (OVIs)

The logframe refers to 'Increased volume of imports and exports through Vic Falls border to and from various destinations in Zambia and neighbouring countries'. The Sources of Verification are cited as 'Central Statistics Office', 'GDP and trade statistics on Zambia and East-Southern Africa' and 'Customs records at Zambia revenue'.

We are not aware of specific baseline data collected for this project, however in the course of the study we have visited the relevant authorities in an attempt to get information on trends 'before the project' to 'after the project'. We have also considered traffic flows through the border posts at Katima Mulilo, Kazungula and Victoria Falls. These are reported on under 'Impacts'.

Project Purpose

This is stated 'To contribute to the establishment of a safe and sustainable national road network achieved by the end of Road Sector Investment Programme (ROADSIP) II (2013)' and the OVIs are stated as 'Vehicle operating costs' and 'Road Condition'. Once again, we are not aware of specific baseline data being collected. We note the reference to the word 'safe'; however there is no mention of accident statistics which is a relevant indicator for a project of this nature.

Results

These have been verified through the Provisional and Final Acceptance certificates and the final project accounts and we have provided summaries of costs incurred on each Contract. The works are widely perceived to have been well done, as was evidenced by the comment made by several stakeholders in Livingstone, Zimba and Choma that this road was now 'the best road in Zambia'.

Assumptions

The assumptions made in order to achieve the results were that: a) competent contractor and consultant are recruited to implement the project; b) the three Road Agencies will develop capacity and effectiveness as regard the road network management, assigning competent staff to the project and c) the cost of oil and bituminous products will not continue to escalate.

The first two assumptions carried a low risk. The foreseen amounts of the works and supervision contracts was considered sufficient to ensure participation of good contractors and consultants to the tenders; however it was recognised that, on average, no more than five or six contractors presented an offer to recent works tenders in Zambia. Concerning the Road Agencies the appointment of staff was on-going and considered sufficient to manage the project. The third assumption carried a high risk and was considered to be mitigated by the contingencies of the project or as a last option by allocation of extra funds from the GRZ or the EC.

The original WSP cost estimate of 2003, equivalent then to € 21.4 million over 86.9 km, indicated a unit cost of € 246,000 per km. The subsequent EU provision, in the 2006 financial agreement, of € 15.0 million for 72.8 km was thus at a significantly lower unit cost of € 206,000 per km. The final realised unit cost (including costs financed by GRZ) of approximately € 36.5 million over 42.8 km was in fact close to € 850,000 per km, thus being nearly 3.5 times the original WSP estimate, and over four times the original EU provision. This very high unit cost increase can be attributed to (1) major inflation of construction costs over the last ten years, and (2) rapid continued deterioration of the road over the same period, including severe damage caused by heavy rains in 2007/08. Overloading of trucks on the route, known to have been a serious problem at the beginning of the last decade, may also have exacerbated the rate of deterioration.

Another assumption was that the Government would continue its Axle Load Control Programme and all the Zambia weigh stations would be rehabilitated, staffed and fully operational by the end of 2006. The Livingstone station has indeed been reconstructed and modernised, and was perceived to be working well.

Some statements tend to be vague: 'VOC savings are passed on to economic operators who respond to opportunities', 'Efficient truck overload control and management of roads by RDA', 'Sufficient maintenance funding in future', 'Cost of oil and bituminous products will not

continue to escalate'. It would have been easier and clearer for evaluation purposes if the baseline parameters had been set in advance.

It was stated in the FA that, in order to measure the achievement of its purpose, it was intended to use traffic flows counts, road condition surveys, road safety statistics and import/export statistics through the southern corridor, however these were not reflected in the logframe.

The results of the initial WSP economic analysis for the base case indicated an economic internal rate of return of 23.0%. The sensitivity analysis for a 20% higher investment together with a 20% reduction in benefit still yielded an EIRR of 15%, all of which indicated an economically viable project. However, it has to be remembered that the original 2004 evaluation showed a total financial cost of US$25.96 million (then equivalent to €21.4 million) for the 86.9 km from Zimba to Victoria Falls; the subsequent allocation of € 15.0 million by EU was for the rehabilitation of the 74.8 km from Zimba to the Livingstone water tower. This is understood to have been partly determined by the level of funding available for a project, which had previously been expected to be funded by the World Bank. Also, although the WSP analysis recommended the highest-cost option of an asphalt concrete surface on crushed rock basis, the cheaper option of asphalt concrete on a cement stabilised gravel base would have cost only US$ 17.31 million (€ 14.43 million) at 2004 prices.

Traffic and Road Design Loading (Summary Version) (For full version refer to Annex VIII Technical Annexes)

RDA data indicate that traffic at Zimba increased from 326 vehicles per day (vpd) in 1995 to 462 in 2003, 689 in 2008, and 913 in 2011. Average annual traffic growth was therefore 4.5 % in 1995-2003, 8.3 % in 2003-08, and 9.8 % in 2008-11. Detailed comparison by vehicle type of the 2008 and 2011 counts show there was substantial growth for most vehicle classes, other than pick-ups and buses. There was also a significant increase in the proportion of vehicles travelling by night.

The original detailed design, prepared in 2003-04 by WSP International for the 85.9-km Zimba-Victoria Falls section, based its traffic forecasts on the heavier flows close to Victoria Falls, using constant traffic growth rates of 3 % for light vehicles and 4 % for trucks. Also using vehicle load values from a 2003 survey at Kafue weighbridge, they generated an expected 20-year road loading of 9.06 million equivalent standard axles (ESA) for the period 2008-27.

The Supervising Engineer, Nicholas O'Dwyer (NOD), contracted in 2008 to update the earlier design, used Zimba traffic data, applying annual growth rates for all vehicle classes of 5 % to 2017, and of just 3 % for 2017-30. This gave expected daily traffic flows of 837 in 2011, 1,122 in 2017, and 1,648 in 2030. Using vehicle loading parameters from an RDA axle load study in 2007, they reduced the expected 20-year road loading for 2011-30 to 7.9 mn ESA.

Traffic actually recorded at Zimba appears to be well above forecast, with the 2011 total flow of 913 vpd being 9 % greater, and the heavy truck flow of 293 vpd 15 % greater, than forecast. The latest RDA count for 2013, which might possibly be overstated, shows a further dramatic increase to 1,616 vpd, which is already nearly up to the NOD forecast for 2030.

The WSP and NOD axle load forecasts assumed average ESA values for multiple trucks (of 4 to 9 axles) of 5.18 and 4.0 respectively, which appear reasonable if vehicles correctly observe the current gross vehicle weight (GVW) and individual axle load regulations. It is, however, known that severe overloading has occurred on this road in the past, as evidenced by an independent axle load survey north of Livingstone in 2002. That survey found that 12 % of 791 heavy vehicles weighed were loaded to 80 tonnes GVW (43 % above the 56- tonne limit), while 9 % of trailing axles were loaded to 12 tonnes or more; one vehicle in each direction was found to generate a value of 171 ESA. Measures to control overloading have

been taken in the past ten years by RDA's axle load unit, including installation of the new electronic weighbridge at Livingstone, and appear to have had some effect, but there are always likely to be rogue operators who will attempt to evade the controls, and it is critical to ensure that control of overloading remains strict and effective.

New weigh station at approach to Livingstone

Weighing in progress at new weigh station in Livingstone

In summary, there appears to be a significant risk that the planned road life of 20 years may be reduced by higher than expected traffic growth, and also by some continued overloading of vehicles. This problem could be exacerbated if routine and periodic maintenance requirements, including preventative reseals or overlays, are not also rigorously observed. It is pertinent to note that no protective reseal appears to have yet been applied to the Monze-Zimba road, also funded by EU, ten years after its completion in 2003.

Project Viability

With the major increase in costs, it is necessary to make a reassessment of realised economic viability of the project. An attempt was made to assess this on the basis of the summarised HDM-4 outputs printed in the WSP Final Report of 2004.

The original WSP economic analysis of 2003 predicted an economic internal rate of return (EIRR) for the project of 23.0 % per annum, with a net present value (NPV) in 2003 of US$ 13.86 million, made up as follows:

(US$ mn)	
Construction costs	(14.26)
Other capital costs	0.65
Recurrent costs	(0.24)
Vehicle operating cost benefits	26.69
Travel time cost benefits	1.02
Overall NPV	13.86

These values were then revised into estimated 2008 dollar prices, assuming the following dollar value increases in the different cost and benefit categories:

Construction costs	250 % (by 3.5 times)
Other capital costs	100 %
Recurrent costs	100 %
Vehicle operating cost benefits	50 %
Travel time cost benefits	20 %.

The result would be to revalue the NPV components as follows:

(US$ mn)	
Construction costs	(49.91)
Other capital costs	1.30
Recurrent costs	(0.48)
Vehicle operating cost benefits	40.04
Travel time cost benefits	1.22
Overall NPV	(7.83)

This would indicate that the project of 2003, at revalued 2008 prices, would no longer have been viable.

However, the following important changes occurred over the five years 2003-08:

- Traffic grew by 49 % (from 462 to 689 vehicles per day);
- Traffic growth rates have continued to be above those predicted by WSP (or NOD);
- The proportion of heavy multiple trucks incurring higher VOC benefits per vehicle, has continued to increase more rapidly than expected;
- Due to the very poor condition of the road by 2008, initial VOC savings as a result of the project were undoubtedly greatly increased.

The effect of all these changes will probably have been to increase benefits by at least 75 to 100 %, indicating an overall NPV in the range US$ 23 to 33 million, and a benefit-cost ratio (BCR) in the range 1.4 to 1.7. Hence the project as executed has almost certainly shown good economic viability, with an EIRR well above 12 %.

3.1.5 Extent to which objectives address identified problems and social needs/ Clarity and internal consistency of the objectives

Q. The extent to which stated objectives correctly address the identified problems and social needs, clarity and internal consistency of the stated objectives?

The Overall Objective was ‘Promotion of equitable economic growth, regional integration and poverty reduction in Zambia’ and the Objectively Verifiable Indicator was ‘Increased volume of imports and exports through Victoria Falls border to and from various destinations in Zambia and neighbouring countries’. The importance of this project can be adjudged by the fact that this road was the only section in poor condition along the entire corridor connecting Zambia with Tanzania at Nakonde, with Zimbabwe at Victoria Falls and with Namibia at Katima Mulilo, and its rehabilitation was expected to have a big impact throughout the region on the import/export of passengers and goods.

The Financing Proposal was subject to scrutiny by the Quality Support Group in Brussels, which recommended some improvements to the layout and content. The social needs were correctly expressed; however, the means of measuring and evaluating trends was not considered to any great extent.

3.1.6 Extent to which original problems have changed

Q. The extent to which the nature of the problems originally identified has changed?

The project preparation documents refer to the remaining 72km un-rehabilitated section of road T1. At the time of preparation of the FA, costs were significantly underestimated. The budget of □15m was far too low to cover the cost of the construction of 72 km of road as originally stated in the FA under results. Co-financing was not considered in the original FA. Following the signing of a Rider to the FA in 2008, instead of funding 72km, the project contributes approximately 33% towards the construction of 42.8 km only, together with the costs of the contract for the Supervisor's Representative (SR) on site. The remaining share of the costs was covered through GRZ funding. The remaining 30.0 km of road immediately south of Zimba were rehabilitated separately under a contract financed wholly by GRZ.

Originally it had been intended to fund the project as an extension to the Monze-Zimba road, however the World Bank expressed an interest in providing the necessary funds. Later this approach altered and GRZ requested the EU to provide funds, which were put together from the remaining funds in the Monze – Zimba and Mpulungu Harbour Fas and others.

3.1.7 Extent to which original objectives have been updated

Q. The extent to which objectives have been updated in order to adapt to changes in the context?

The Logframe has not been updated during the course of the project, apart from amendments by Rider to the budget lines. One of the reasons for this is that there is no prescribed responsibility to use the logframe for road construction programmes and one of the Consultant's recommendations is to make a concerted effort to use the logframe as a management tool, for example by including it in the Consultant's progress reporting and/or using it as a guide to a Steering Committee, if one exists. As it became clear that the funds were insufficient it was agreed that EU funds would be used to fund the site establishment and earthworks mainly and that the GRZ funds would be used mainly for the layerworks and finishing. Specific budget funds were allocated by agreement to either EU or GRZ.

3.1.8 Degree of flexibility and adaptability

Q. The degree of flexibility and adaptability to facilitate rapid responses to changes in circumstances?

When the initial tender failed in 2007, GRZ has to be commended for deciding to fund separately the first 30km. The decision was taken due to the rapid deterioration of the road as it reached the end of its life, aggravated by exceptionally heavy rains in 2007/08, and the general clamour from the road users due to the poor condition of the road. It was also decided that GRZ would co-finance the 42km section that would be constructed according to the EDF conditions of contract. There were disadvantages to these decisions (particularly due to the lack of competition in the procurement process for the 42km contract); however it proved to be the most expedient.

As the contract progressed, additional works were approved of drainage and concrete works at the Police checkpoint and weighbridge in Livingstone. It also proved convenient for GRZ to enter into a separate contract with CGC (Contractor) for the rehabilitation of the Lusaka City roads following the completion of the 42km contract.

The Audit carried out by the Attorney General's (AG) office on the operations of RDA led to many allegations on the procurement and implementation of projects. This in turn led to the implementation of both Financial and Technical audits by the EU. The final report of the Financial Audit was furnished to the AG's office.

Problems were experienced on this project in relation to the underestimation of works. Eventually the financial offer from M/s CGC (with a negotiated 5.5% discount) amounted to □35,520,248.58, which was 8 % higher than the most recent engineer's estimate of € 32.8 million prepared in 2009 by the Consulting Engineer, M/s Nicholas O'Dwyer (NOD). This variance was considered to be within an acceptable 15% plus/minus range for works contracts.

3.1.9 Quality of identification of key stakeholders and target groups

Q. The quality of the identification of key stakeholders and target groups (including gender analysis and analysis of vulnerable groups) and of institutional capacity issues?

The rehabilitation of the Zimba to Livingstone road was seen as a natural extension of the previous EDF-funded Monze to Zimba road and, due to its importance in the trunk road network and its obvious coherence with EU and GRZ policy, there was not much work carried out in terms of stakeholder and target group analysis. At the time, it was expedient to proceed with the works and service contracts as soon as possible; however the level of stakeholder analysis, which is in keeping with good practice for EDF funded road projects, was insufficient in this instance. In addition the EU was providing sector budget support during this period, which was seen as a means of boosting institutional capacity. Unfortunately, the EU suspended its budget support to the sector in 2008.

3.1.10 Stakeholder participation in the design and management/implementation of the programme

Q. The stakeholder participation in the design and in the management/implementation of the project, the level of local ownership, absorption and implementation capacity?

The primary target group was the road users. Investment in rehabilitation and maintenance directly translates to savings in vehicle operating costs. The broader target group was the population living along the corridor route. It was known that the people living along the corridor would benefit from increased employment opportunities during the works and during the maintenance period. Tourist operators were also expected to benefit from the project due to improved access to Livingstone and Victoria Falls and the Southern portion of Kafue National Park.

Key stakeholders in the road sector were the management and staff of the RDA and the National Road Fund Agency (NRFA) in addition to Contractors and Consultants from the private sector. These agencies are governed by Boards that represent the various stakeholders in the industry, however the RDA is currently operating with a Board Chairman only.

3.1.11 Quality of analysis of strategic options

Q. The quality of the analysis of strategic options, of the justification of the recommended implementation strategy, and of management and coordination arrangements?

Trunk road T1 is a strategic route linking Zimbabwe at Victoria Falls and Livingstone to Lusaka and the rest of Zambia. The T1 is 428km long and intersects Trunk road T2, Chirundu to Lusaka, approximately 12km south of Kafue and 2km south of the Kafue River. The T1 is also used to link Lusaka with the Botswana and Namibian border crossings via the M10, Livingstone through Kazungula and Sesheke. It is the only trunk road linking Lusaka with large areas of south-western Zambia, and therefore a key element of the national infrastructure.

Internationally accepted design methods were used for the design of the project. Cement stabilised gravel road base technology is in widespread use in Zambia and elsewhere in Africa. Contractors are familiar with this technology as well as with asphalt concrete construction. Contract documents were governed by the latest versions of “Specifications and Conditions of Contract” that are used and respected internationally.

In the early 2000s, the International Development Association (IDA) provided a credit to GRZ in support of ROADSIP for the rehabilitation/upgrading design of the T1 trunk road between Zimba and Livingstone. WSP International Management Consulting Ltd (WSPimc) were appointed to carry out the contract for the provision of consultancy services for Techno-Economic Studies and Detailed Engineering Designs - Package 1 Rehabilitation of Roads T1 and T2, for the Ministry of Works and Supply (MWS). The relevant road section under this design contract was the T1 trunk road from the Zambia/Zimbabwe Border to Zimba, a distance of approximately 85.9kms.

The project assumed km 0+00 to be at the construction joint where the Monze – Zimba project ended at km213+100, approximately 2km south of Zimba. The end of the project was at the Zimbabwe border at approximately km 85+90. The town of Livingstone lies between km 72+80 and km 78+00. The Zambian border control gate is at km 85+30. From Km 0+00 to Km 72+800 the road was described as a rural 2-lane road with unpaved shoulders traversing flat to undulating terrain. Km 6+40 to km 11+00 has grades of 3,0% to 6,7% maximum.

The only bridge on this section of the project road was the existing road over rail bridge. This was built in the eighties and was in relatively good condition – cosmetic work only was designed for this point. The bridge was described as a road over rail bridge with a deck on brick abutments and simply supported wing walls at chainage 51+400 with a length of 12.55m and a width of 10.6m.

The design was based on a cost estimate of □250,000/km, but this figure increased dramatically over the intervening years up to the commencement of the works and the final project costs were in the region of □850,000/km. Even at the earlier estimate of □250,000/km, the Financing Agreement amount of □15m was never going to be sufficient for the proposed works. In 2005 it was decided that funds could be sourced for the works through EDF funding and an addendum was issued to IMC Worldwide to convert the bidding documents from WB to EU format in June 2005.

The management and coordination arrangements were clearly defined and support institutional strengthening. The European Union (EU) is the funding agency, the National Authorising Office (NAO) is the Contracting Authority, the Supervisor is the Road Development Agency (RDA) and Supervisor's Representative (SR) is the Consultant.

3.1.12 Realism in the choice and quality of inputs

Q. The realism in the choice and quantity of inputs (financial, human and administrative resources)?

The Key personnel for both Contractor and Consultant were clearly defined in the tender documents and subsequently formed a topic for negotiation with the Contractor. Thereafter the incentive was for the Contractor to provide sufficient qualified manpower to carry out the works in accordance with the approved programme and sufficiently qualified manpower for the Consultant in order to ensure adequate quality control. Many projects are seriously compromised by changes in key personnel; however in this case the site personnel for both Consultant and Contractor remained stable throughout the contract period. One change in the Resident Engineer was made at the end of the project only. There was a high turnover of staff

in the RDA and the NRFA and many changes were made following the GRZ audit of the road sector in 2009. This had little effect on the implementation of the road project, apart from delayed approval of additional works; however it caused a certain amount of turmoil in the management of the road sector.

The cost estimates for the works were not realistic and the amount of the FA derived from available 'left-over' funds from other EDF projects and was far from adequate to cater for the actual road costs.

Liquidated damages were contained in the works contract as an assurance against failure by the Contractor to perform, and retention monies were withheld pending satisfactory completion of the works.

3.1.13 Analysis of assumptions and risks

Q. The analysis of assumptions and risks?

The condition to be met by GRZ was the provision, within the 2006 Budget, of adequate resources for the operation of the three (3) Road Agencies and the continued support of ROADSIP through dedicated road user taxes. The main accompanying measure for the smooth works completion was a satisfactory coordination between the design, supervision and construction teams and timely preparation of certificates and payments.

An analysis of the assumptions made was contained in the Technical and Administrative Provisions for Implementation (Annexed to the FA). Assumptions made in order to achieve the results were that a competent contractor and consultant would be recruited – procurement systems were designed to achieve the best-combined result in terms of technical ability and value for money. The analysis concluded that the foreseen amounts of the works and supervision contracts would be enough to ensure participation of good contractors and consultants to the tenders; however, there was a question as to the possible limited number of bidders for tenders in Zambia.

It was assumed that the three Road Agencies would develop capacity in road network management and assign competent staff to the project. The Road Agencies were continuing to recruit staff at the time.

The logframe also contained the assumption that the cost of oil and bituminous products would not continue to escalate. The analysis contained in the FA considered this to be risky and could only be mitigated through the possible use of contingency funds or through the allocation of extra funds from the EU or GRZ.

To achieve the purpose the main assumption was that the Government would continue the implementation of its sectoral policy and institutional reforms, which included a financial strategy aimed at securing sufficient domestic financing for road maintenance in the medium term. The most important provisions of this strategy were that 100% of fuel levy and other road user charges would be remitted to the Road Fund (RF), and that 100% of routine maintenance and at least 50% of periodic maintenance on the Core Road Network (CRN) would be financed by these means.

Another assumption was that the Government would continue the Axle Load Control Programme and that the weigh-stations in current use would be rehabilitated, staffed and fully operational. The analysis of assumptions concluded that the economic situation in the country was not yet stable, and the satisfactory financing of road maintenance would therefore always be at risk.

In our view the assumptions were well founded however somewhat vague (refer to 3.1.4 Quality of Logical Framework); however, in summary:

1 We believe that a competent Contractor and Consultant were employed
2 The Road agencies recruited staff; however, there has been an extremely high turnover of staff which has been far from ideal
3 Costs of oil and bituminous products have continued to rise over and above the normal inflation rates, and there has been a noticeable policy shift in the seeking of alternative sources of energy
4 We noted that routine maintenance contract tenders are being launched for the Zimba to Livingstone Road. Periodic maintenance has not been carried out on the Monze to Zimba road, although the road was completed in 2003. The road surface is in relatively good condition; however, preventive maintenance is required and a single seal is warranted.
5 There is a new weigh station at Livingstone (constructed in 2010) and it appears to be functioning well; however, overloading is still prevalent and many challenges remain.

3.1.14 Appropriateness of monitoring and evaluation

Q. The appropriateness of the recommended monitoring and evaluation arrangements?

It was considered that the progress on site would be monitored on the basis of the supervising consultant's monthly reports and through monthly meetings. The works completion would be assessed through the provisional and final acceptance certificates and the final statement of accounts. It was intended that other parameters would be measured through reports produced by the Central Statistics Office (CSO), trade statistics, customs records and ROADSIP reports. A Mid-Term Review was not envisaged.

Results Oriented Monitoring (ROM) was carried out once in 2010 and the project scored straight Bs for the parameters of 1) Relevance and quality of design; 2) Efficiency of implementation; 3) Effectiveness, 4) Impact and 5) Sustainability. From the 'snap-shot' perspective of ROM, the evaluators can understand this assessment; however from the perspective of a final evaluation, the evaluators would assign a 'C' mark for sustainability due to the historical insufficiency of funds for maintenance works and current emphasis on new road building.

In keeping with good practice for EDF road projects, a Technical Audit carried out five missions. The Auditor General's Office carried out a general audit of the road sector, which included a specific audit of the Zimba to Livingstone Road. The EU then commissioned a Financial Audit, partially in response to the AG audit but also as a means of good practice. These audits were financed through a reallocation of some of the contingency funds to the budget lines for evaluation and audit.

3.2 Achievement of Purpose (Effectiveness)

TOR Extract
The effectiveness criterion concerns how far the project's results were attained, and the project's specific objective(s) achieved, or are expected to be achieved.

3.2.1 Delivered planned benefits

Q. Whether the planned benefits have been delivered and received, as perceived by all key stakeholders (including women and men and specific vulnerable groups)?

The central and land-locked position of Zambia poses a high demand for an improved and sustainable road infrastructure network, both within the country and linking to the rest of the region. Various inter-regional routes connect with the Zambian core trunk road network at different locations and one of these routes is the trunk road T1 from T2 junction (after Kafue Weighbridge) to Livingstone which links Zambia's capital Lusaka to the tourist capital Livingstone.

The evaluators consider that the project will have contributed to the Project Purpose (as elaborated in the logframe), being the establishment of a safe and sustainable road network by the end of ROADSIP II (2013); however many stakeholders have cited the high level of accidents due to overspeeding and this issue will need to be taken up with the Police, the Road Traffic Safety Agency (RTSA) and RDA in future.

View of end of project road approaching Livingstone and water tower

View of project road at road over rail bridge

Its rehabilitation completed the remaining section of trunk road T1 which was earlier rehabilitated by the European Union from Monze to Zimba under the 8th European Development Fund (EDF), at a cost of approximately ZMK54.44 Billion, and was completed in September 2002.

3.2.2 Participation of intended beneficiaries

Q. Whether intended beneficiaries participated in the intervention?

We are aware of the active intervention of the RDA; however, the road users were not actively involved in the project preparation. As an existing road in a very poor state, there was no doubting that its rehabilitation was a priority of the road users, and we were informed by many stakeholders of the length of time formerly needed to reach Zimba or Livingstone (up to four hours for 75 km), and of the high risk of punctures and other vehicle damage. The primary focus was on the rehabilitation of the road itself, and some other aspects that could have been beneficial to the communities and road users were not considered in the project design. The project was lacking in its approach to social and environmental management, as these were not seen as the priority at the time.

A social survey was carried out for the purpose of this final evaluation and interviews were held with 42 households, traditional leaders, local authorities, education and health representatives along the road. The impacts of the road development have been stated elsewhere. It is clear that the Contractor was left to his own devices in order to gain access to borrowpits and water for construction. He negotiated terms with some of the community members, however other members are aggrieved and it seems that these negotiations were not carried out in an egalitarian fashion. Our recommendation is that these issues should be considered at the design stage and a detailed environmental management plan inserted into the Contract Documents, which is the case for many of the current projects being managed by RDA.

3.2.3 Changes in institutions that produced improvements

Q. In institutional reform projects, whether behavioural patterns have changed in the beneficiary organisations or groups at various levels; and how far the changed institutional arrangements and characteristics have produced the planned improvements (e.g. in communications, productivity, ability to generate actions which lead to economic and social development)?

The road project happened against a backdrop of institutional change, which is on-going. MTWSC is the owner of the national Transport Policy. It is the supervisor of all modes of transport, including the dominant roads sub-sector. The Ministry of Communications and Transport (MCT) was merged with the Ministry of Works and Supply (MWS) to become the Ministry of Transport, Works, Supply and Communications (MTWSC) in October 2011).

RDA, NRFA and RTSA have also undergone a process of organisational change and institutional reform. Issues of poor management of the sector came to the fore in 2009 and there was certainly an over-commitment to projects for which funds were not available. Since then, many key staff changes were made. RDA has launched the Link Zambia 8000 Project and the Pave Zambia 400 Project, which are concerned with the construction of new roads throughout the country and in the urban centres. This is a very ambitious programme and the concern is that maintenance activities and the construction of feeder roads will suffer at the expense of the new roads, which may not be sustainable in the long-term and the Government may struggle to fund the many projects that have been initiated. On the positive side, there is much employment generated by these works and it remains to be seen how successful the current programmes will be. Currently RDA is under the auspices of the Office of the President. There are also challenges (as in other countries) of providing an enabling environment for local contractors, improving capacities at all levels, achieving improved access to finance and plant etc. Overall the developments have been positive; however it remains to be seen how successful the current programmes will be.

3.2.4 Flexibility of management in terms of risks/assumptions

Q. If the assumptions and risk assessments at results level turned out to be inadequate or invalid, or unforeseen external factors intervened, how flexibly management has adapted to ensure that the results would still achieve the purpose; and how well has it been supported in this by key stakeholders including Government, Commission (HQ and locally), etc.?

EC procurement rules and regulations are based on the assumption that there is sufficient competition on the market. However, at the time, there were only a few companies active in the country to implement a project of this size. Nowadays more Chinese companies have registered in the Grade I category. Additionally, South African companies withdrew from Zambia to get a share of the massive construction programmes in preparation for the 2010 World Cup in their own country.

Consequently, just one eligible tender remained at the end of the tendering process, the same one that had completed the first 30km project. This situation was unforeseen and unfortunate and implied that the level of competition for the bid was low. We have recommended some measures that can be taken to ensure that there is greater competition for EDF tenders in future.

There was an inherent assumption in the FA that the funds would be sufficient to carry out the entire works. This proved not to be the case and the Authorities should be commended for 'cutting the cloth' to suit the project and GRZ funded the main portion of the road and the available finance in the FA was used to fund the remainder.

There was also the assumption that adequate funds would be set aside for maintenance. The evaluators are aware that contracts for routine maintenance of the project road have been let. Funds generated by the Fuel Levy are in themselves insufficient to cater for the maintenance needs of Zambia's expanding core road network and this fact has been acknowledged by the RDA.

The assumption that the Axle Load Control Programme would develop was valid. Development in this area has been positive, however slower than anticipated.

3.2.5 Appropriateness of balance of responsibilities

Q. Whether the balance of responsibilities between the various stakeholders was appropriate, which accompanying measures have been taken by the partner authorities?

Progress meetings were held at various levels, which included management meetings, monthly progress meetings and site meetings. The level of participation was appropriate and the implementation has become smooth due to the standard nature of the activities.

3.2.6 Effect of unintended results on benefits

Q. How unintended results have affected the benefits received positively or negatively and could have been foreseen and managed?

It was reported that at the time of the ROM mission in 2010 that the project implementation was overshadowed by a debate between the international donor community and GRZ and the Ministry of Works and Supply (MWS) and the RDA, following the a series of audits looking into recent major road development projects in Zambia. The RDA continues to experience 'audit fatigue' as many audits (both internal and external) have been carried out, and these tend to be time-consuming and detract from the core activities of the RDA

personnel.

Consequently, the level of trust between both sides was very low. The EU launched the financial audit for this project in May 2010. Around this time the Permanent Secretary (PS) of MWS was transferred and the RDA's Board was dissolved. The Contracts of the Senior Managers in RDA were terminated and there have continued to be constraints in the staffing of RDA (planning, design, procurement, supervision, processing of payments and reporting), affected by RDA's limited operating budget, and constraints in the construction industry's capacity. Moreover, there was change in leadership of the ROADSIP II (policy) dialogue between GRZ and the Cooperating Partners (CPs), in early 2009.

The Attorney General's (AG) audit of the RDA for the years 2006 to 2009 concluded that:

- There was a serious over-commitment and inadequate budget provision for contracts
- The quality of contract documents was poor
- Consultants were appointed late
- There was poor contract administration
- There were many instances of delayed payments and poor quality of works.

Specifically in relation to the Zimba – Livingstone Road the AG report recorded that the contract for the first 30km was awarded on 14th July 2008, to China Geo Corporation (CGC) at a contract price that was later revised to K120.6 billion. The Contract period was originally 9 months but later extended to 15 months. This contract was supervised by Zulu Burrow, the local associate of Nicholas O' Dwyer and Partners.

The second contract (the last 42.8km) was split into contract A and B. The EU financed bill numbers 1 to 12 (Contract A) at a cost of €11,570,229 whereas GRZ funded bill numbers 13.1 to 28.2 (Contract B) at a cost of €23,950,019.09. The total contract sum (Contracts A and B) amounted to €35,520,248.58 (including a 5.5% discount). Contracts A and B were awarded to CGC and signed on 8th April 2009. The AG report stated that the Contract was awarded to CGC during the period when the Contractor was blacklisted by Government. It was also noted that there was a large variation in prices between the GRZ and the joint funded contract. The EU financial audit was commissioned partially as a response to the GRZ audit. The GRZ findings were not agreed with by all parties (for example it was not common practice for the EU to disclose the budget for the works). Technical Assistance to the AG's office was provided through DANIDA support. The EU was the lead in the sector; however, DANIDA were quite influential and ultimately the decision was taken to suspend funding to the Road Sector.

The EU commissioned a procurement and technical audit of roads projects managed by RDA in 2008. The conclusion of this report was that the agencies were found substantially compliant with the corrective measures proposed in the AG's Audit, and several best practices were recommended in terms of procurement guidelines.

An instruction made by GRZ not to pay contractors advance payments was taken as a policy without properly weighing up the effects of such a policy on bid prices. It was also recommended that the RDA liaise with the National Council for Construction (NCC) to discuss the possibility of re-introducing technician courses at NCC that used to be undertaken by the Roads Department.

The ADB are financing the construction of the Kazungula Bridge, which will also have a large effect on traffic to the Zimba to Livingstone Road. Due to the expansion of the township from Livingstone up to the environs of the weighbridge, the long-term plan is to build a bypass around Livingstone and build a new weighstation.

3.2.7 Consideration of cross-cutting issues

Q. Whether any shortcomings were due to a failure to take account of cross-cutting or over-arching issues such as gender, environment and poverty during implementation?

Cross cutting issues were considered in the design. With respect to environmental issues, there was no specific EIA carried out and the Contractor was required to prepare an EIA for the approval of ZEMA. It was reported that there is a tendency in EIAs to put more emphasis on bio-physical than socio-economic aspects, which is partly due to the fact that bio-physical aspects are better described in regulations and guidelines than is the case with socio-economic aspects. Communities interviewed have complained that the Contractor was supposed to implement schemes of benefit to the communities for the use of borrowpits and for the abstraction of water, but that only some members of the communities benefited and there was no comprehensive monitoring of these activities.

HIV/AIDS awareness activities received due attention and activities were carried out on a monthly basis for one year; however, the Contractor failed to implement these towards the end of the Contract. There is room for improvement through prescribing the activities to be carried out, and a possible expansion to include safety and gender awareness, and also to take these campaigns to the schools in the area.

3.3 Sound Management and Value for Money (Efficiency)

The efficiency criterion concerns how well the various activities transformed the available resources into the intended results (sometimes referred to as outputs), in terms of quantity, quality and timeliness. Comparison should be made against what was planned.

3.3.1 Quality of day to day management

Q. The quality of day-to-day management, for example in:

- **Operational work planning and implementation (input delivery, activity management and delivery of outputs), and management of the budget (including cost control and whether an inadequate budget was a factor);**
- **Management of personnel, information, property, etc.,**
- **Whether management of risk has been adequate, i.e. whether flexibility has been demonstrated in response to changes in circumstances;**
- **Relations/coordination with local authorities, institutions, beneficiaries, other donors;**
- **The quality of information management and reporting, and the extent to which key stakeholders have been kept adequately informed of project activities (including beneficiaries/target groups);**
- **Respect for deadlines.**

3.3.1.1 Financing Agreement (FA) and Riders

The FA was signed on 12th July 2006. The programme components of the FA included:

1) Works
2) Supervision
3) Evaluation, and
4) Audit.

The corresponding activities envisaged in the FA and Rider are as follows:

Table 1 Activities in the Financing Agreement and Rider

Budget Item	Amount (€)	Rider No 1 (June 2009)	Reallocation	Final Budget Breakdown
Works	12,630,000	11,917,000		11,917,000
Supervision	1,000,000	1,650,000		1,650,000
Evaluation	50,000	50,000	+30,000	80,000
Audit	20,000	20,000	+260,000	280,000
Sub-total	13,700,000	13,637,000		13,977,000
Contingencies	1,300,000	1,363,000	-290,000	1,073,000
Total	**15,000,000**	**15,000,000**		**15,000,000**

Rider No 1 formalised the change in the funding from 72km to 42.8km through co-financing by EU and GRZ and ordained that the operational implementation phase should finish at the end of December 2013.

A Summary of the payments made for the various contracts is as follows:

Table 2 Summary of Payments made to Date

Contract	Title / Contracting Party	Contractor signature date	End date of activities	Amount (EUR)	Paid (EUR)	Balance (EUR)
FED/2009 /205-223	**China Geo Eng. Corporation Ltd - Works**	08/04/2009	10/06/2012	11,570,229.49	11,499,508.44	70,721.05[1]
FED/2007 /195-836	**Nicholas O'Dwyer and Partners - Service**	31/12/2007	10/12/2012	1,054,716.00	888,497.58	166,218.42[2]
FED/2007 /195-837	**Nicholas O'Dwyer and Partners - Service**	24/12/2007	08/04/2009	385,413.65	385,413.65	
FED/2010 /243-781	**Ove Arup and Partners International Ltd - Technical Audit**	02/08/2010	15/08/2012	103,854.01	103,854.01	
FED/2010 /245-096	**Moore Stephens LLP - Financial Audit**	04/05/2010	26/11/2010	58,956.94	58,956.94	
FED/2012 /300-092	**Paul Basondole - Complementary services related to technical audit**	31/08/2012	25/01/2013	9,265.00	9,265.00	
FED/2013 /320-983	**PLANET AE - Final Evaluation**	01/08/2013	17/10/2013	78,850.00	47,310.00	31,540.00[3]

Note: Information as at October 2013.
[1] Balance after settlement of final account to China-Geo
[2] Balance before payment of invoice for final acceptance and release of retention to NOD
[3] Balance outstanding to Planet AE

The FA for this project was signed in April 2006; however, the project implementation suffered significant delays. The tender for the rehabilitation of the complete road from Zimba to Livingstone (72.80km) was launched in 2007. Four tenders were received and administratively non-compliant but only one was technically compliant and the available budget was exceeded. It was considered that responsiveness was low due in part to the pre-occupation of South African contractors with the 2010 World Cup preparations. At the time, the EU Delegation wanted to annul the tender and negotiate with the recommended Contractor; however, AIDCO did not agree with this approach due mostly to the lack of available funds within the EU budget.

The services tender for the supervision of the civil works was successful. Thus, the works tender procurement was cancelled and the service contract for the supervision of the civil works was concluded with M/s Nicholas O'Dwyer and Partners (NOD) in anticipation of re-launching the works tender under a reviewed design.

It was envisaged that a works contract could be awarded in late 2008; however, the RDA decided that it would be more expedient to commence rehabilitation of the first 30km as soon as possible due to the extremely poor state of the road. Subsequently a Works Contract was awarded to China Geo-Engineering Corporation in July 2008. This contract was entirely funded by the GRZ and was completed in December 2009.

The individual contracts that were co-financed by the EU and GRZ are described in more detail below.

3.3.1.2 Works Contract

The tender for the second section (km30 to 72.8) was closed in January 2009. Only 2 bids were received and the cheapest bid was rejected on the grounds that the Contractor had not attended the mandatory site visit (A request to have a second site visit was turned down). Approval was given to the tender of **China Geo Corporation (CGC)** on the understanding that negotiation would be held over the rates that seemed disproportionately high, especially considering the tax-free status of the EU funding. Subsequently a discount of 5.5% was negotiated and the revised tender price was **□35,520,248.58**, which was split into two contracts.

Due to the funding shortfall, the project is **32.6%** funded by the 9th EDF and **67.4%** funded by the GRZ in two separate contracts as stated below:

- Contract A: financed from resources of the 9th EDF, amounting to approximately **□11.57 million**
- Contract B: financed from resources of the GRZ, amounting to approximately **□23.95 million**

The section of road from **Km 72.8 to Km 85.88** (Livingstone Town Road to the Border) was rehabilitated under a separate contract between the Government of Japan and the Ministry of Local Government and Housing. This road was known to have soon failed badly, and major new repairs had to be carried out in 2013 in readiness for the World Tourism Conference, which was held jointly between Livingstone and Victoria Falls.

The start point of this contract was approximately 30km from Zimba Town and the end point was the Water Tower at Livingstone. The rehabilitation works involved the following:

- Carriageway: 6.1m wide (varied to 6.5m), Asphalt Concrete Wearing Course 40mm thick
- Shoulders: 2.0m wide on each side, Double Surface Dressed
- Base: 150mm Crushed Stone Base
- Sub-base: 200mm Stabilised Sub-base
- Ancillary works including:
    - Extensions to or replacement of drainage culverts
    - New sub-surface drains and lined drains
    - New Road Signs, Guardrails and Marker Posts
    - New Road markings and road studs
    - Widening (2 No additional lanes) at Weighbridge.
    - Additional works to the weigh-bridge, police check-point and concrete foot-paths and drains and street lighting.

There were a total of **16 IPCs** fully paid including advance payments of 10% and 20%. The Contract details are contained in Table 3 below.

Table 3 Contract Details

Contract Title	Rehabilitation of the Zimba to Livingstone Road (42.8km)
Road Length	42.8km
Original Contract Price	Contract A: €11,570,229.49 Contract B: €23,950,019.09
Project Funding	32.6% by the 9th EDF and 67.4% by the GRZ
Contracting Authority	Contract A: GRZ represented by the NAO of the EDF Contract B: GRZ represented by the RDA
Contractor	China Geo-Engineering Corporation (CGC)
Supervisor	CEO/ Director RDA
Supervisor's Representative	Nicholas O'Dwyer & Company Ltd (NOD)
Date of Commencement of the Project	11th May 2009
Period of Performance	18 months
Original Completion Date	10th November 2010
1st Revised Completion Date	28th November 2010
2nd Revised Completion Date	31st March 2011
3rd Revised Completion Date	27th May 2011
Final Acceptance Certificate effective date	29th June 2012
Maintenance Period	12 Months

The original performance period for the civil works was 18 months, commencing on 11th April 2009. The civil works progressed well, though extensions of time were granted due to excessive rainfall and additional works, and final acceptance was granted to the contractor on 29th June 2012 after the expiry of the maintenance period. The scope of works of additional works included works carried out at the Police checkpoint and weighbridge area. The works were well managed and there were very few claims due to unforeseen conditions.

It was considered that CGC may have made some mistakes in the first 30km section, as rutting occurred in places; however, the same mistakes were not repeated in the second section. The SR was considered to have a very strict approach in the administration of the works. Relations with the workforce were generally good, and the impression is given that the monthly HIV/AIDS awareness campaigns carried out by the Service Providers on behalf of the Contractor provided a beneficial inter-action with the local communities.

Deviations were constructed along the entire length of the project road apart from the approach to Livingstone. Many of the cross-culverts were already existing, ranging from 600 to 900mm diameter. It is noted that the RDA do not favour 600mm culverts due to their tendency to block. 600mm access culverts were provided along the route.

The Contractor experienced difficulties with delays in VAT refunds; however, this was partially due to incorrect submissions. The amount of the minimum certificate was high (□1m) which created problems for the Contractor at the earthworks stage. The Contractor wanted to claim interest on delayed payments, and there was a difference of opinion on how this should be applied; however, this claim was subsequently dropped. Addendum 3 to the Contract was delayed. There were a number of areas where the Contractor could have claimed for disruption and additional payment (e.g. interest on delayed payments, delay in processing tax exemption, delay in issuance of addendum); however, the Contractor had difficulty in formulating claims and decided at the end not to pursue any claims.

The Auditor General visited the project in September 2010 and it was noted that the arrival of

the laboratory equipment was delayed. Minor delays were experienced due to rains and cement shortages.

There was a relatively high level of Chinese expatriate staff employed, and there were few Zambian staff at a senior level.

Partial Provisional Acceptance was granted for the main road in November 2010 and additional works were then constructed at the weighbridge and police checkpoint, including lined drains, footpaths and streetlights. The contract specified 365 days as Maintenance Period, which expired on 31st May 2012. Due to logistical arrangements, the final inspection was conducted and the Final Acceptance was declared on **29th June 2012**.

3.3.1.3 Service Contract

A total of 26 firms submitted Expressions of Interest for Consultancy Services in July 2006. Eight firms were shortlisted and 6 submitted bids in March 2007. 2 were non-responsive, and 2 more did not achieve the 80% technical score. **Nicholas O' Dwyer and Partners (NOD)** had the best technical score at 85.2% and the lowest financial price, and were subsequently awarded the contract (over BCEOM).

Due to the unsuccessful works tender it was agreed that NOD should be awarded a complementary services contract for Design Review, and they were invited to submit a proposal. This contract was signed on December 2007 in the amount of □**328,106**.

This complementary service contract extended the scope of design review services which were initially foreseen under the tender for the provision of Supervision Services.

Design Review services earlier foreseen were for a period of one month only and the complementary service contract extended the performance period to eight months for the design review and associated services. The service contract for the supervision of the works was earlier awarded to NOD and on successful completion of the complementary service contract, the consultant proceeded to supervise the implementation of the project.

The contract details are tabulated below.

Table 4 Record of Contract and Addenda for Supervision Contract

Activity	**Date**	**Contract Amount (□)**
Supervision Contract		328,106
Addendum 1	18/04/08	420,105.61
Addendum 2		
Addendum 3 (38m)		
Addendum 4 (43m)	07/08/12	

A total of **7** No. liaison meetings were held during the course of the design review. **23** No. Site meetings were held during the course of the contract, which were well attended by all parties, including the Contractor, Consultant, Roads Department, EU, and NAO. In the initial year of implementation monthly management meetings were held in addition to and on the same date as the monthly progress meetings.

The reporting system was transparent and has been operating largely to the satisfaction of the parties. The Management Information System (MIS), Documentation Control System (DCS) and Cost Control System (CCS) as outlined in the Consultant's proposal for Organisation and Methodology was reportedly satisfactory by the Technical Auditor.

A total of **21** No. Monthly Progress reports were prepared and distributed. Laboratory test results were included in the monthly reports.

Approximately **15** personnel were employed by the SR, including 11 long-term and 4 short-term personnel. The Senior Personnel comprised the Resident Engineer, Deputy Resident Engineer, Quantity Surveyor, Assistant Materials Engineer and Surveyor. 5 No Inspectors were employed at various intervals, and short-term input was provided by Pavement/Contract experts, CAD technician etc. Towards the end of the Contract overtime worked by the SR was paid for by the Contractor. The principal personnel were unchanged throughout the course of the main contract.

There was a breakdown in relations between the Resident Engineer and the Contractor's Project Manager towards the end of the project and the Resident Engineer was replaced in June 2011. There was also frustration expressed at the lack of professionalism of the Contractor's QS department.

Effectively, when the additional works at the weighbridge and police checkpoint were completed, NOD demobilised and in June 2011 the Provisional Acceptance report was issued, which provides a good record of the project activities and inventory of materials.

3.3.1.4 Technical Audit

A Framework Contract (FWC) for the Technical Audit of the project was concluded with **M/s OVE Arup and Partners International** on **2nd August 2010**. Five (5) audit missions were carried out, the last being on 29th June 2012. The framework contract performance duration expired on 15th August 2012 and thereafter the Audit Team Leader was employed in a personal capacity to carry out a wrap-up Technical Audit towards the end of the contract. In general, the Audits provided confirmation that correct procedures were in place and on occasion made recommendations for improvements, which were then verified in subsequent audit missions. The following are some of the summary comments arising from the audit missions:

Audit 1 (September 2010) – In general there was compliance with the works and service contracts and a quality control system was in place according to best-accepted practices. Payments and staffing were in line with expectations.

Audit 2 (February 2011) – This confirmed that Price Revision was being applied correctly. There was need to approve extension of time for additional works. A recommendation was made in future contracts to allow a budget line for an official opening and visibility.

Audit 3 (August 2011) – Environmental and safety issues were noted including a molasses spillage at Km 70+800 – Km 70+900, a bashed bridge guardrail at Km 51+115, a truck that caught fire at Km 41+000 and a kilometre post knocked down at Km 4+000. Road markings and road studs were expected to significantly improve road safety along this section and the audit recommended that road studs should be mandatory for all Trunk roads. It was also noted that there was inadequate parking at the Police Checkpoint, which was lacking in the design.

Audit 4 – (January 2012) – It was concluded that the Contractor completed the project on schedule and within budget and to the specified quality. The contractor therefore executed the works as per the terms and conditions of contract. With regard to vandalism of road signs and road furniture, it was recommended that RDA and other road safety law enforcers should take a leading role in addressing these problems. In addition, awareness campaigns of the communities along the road of safeguarding the investment should be conducted. Furthermore, timely intervention to repair or maintain the damaged sections or stolen and

damaged road furniture is required in order to safeguard the investment spent on the road.

Audit 5 – (August 2012) - The additional works at Weighbridge, Lined Drains, Footpath Walkways and concrete police checkpoint were declared complete on 27th May 2011 and the extensions of time were granted. It was stated that the completed works were constructed to a high standard and that the lines were laid in a neat, workman-like and aesthetically pleasing manner.

Complementary Audit Contract
As the 24-month period had elapsed for Ove Arup a single source tender procedure (less than 10,000) was applied to the lead auditor (Paul Francis Basondole) who carried out a wrap-up final audit in February 2013.

Final Audit Report – February 2013 – It was confirmed that he works were completed within the Approved Programme. The Supervisor granted the Contractor final acceptance of works on 29th June 2012.

3.3.1.5 Financial Audit

Partially in response to the earlier Audit of the AG, the EU commissioned a Financial Audit of the works and service contracts. This was undertaken by **Moore Stephens** who submitted a final report in 2010. The findings were positive and confirmed that the project finances were being managed responsibly. The audit noted that the EU procedures do not allow for adjustment of the Contract Price; however, the tender process was cancelled. It also noted that the Contractor who was awarded the first 30 kms had a perceived advantage and also that control of the Senkobo quarry was crucial to a successful tender. Thus there was a lack of competitiveness in the second tender. The tender documents were unclear over whether the Site Visit was mandatory. The Financial Audit also confirmed that CGC was not on the list of blacklisted companies at the time of award of the EDF contract, as the suspension had been lifted in June 2008 – this was in contradiction to the GRZ audit carried out by the Office of the Auditor General. The audit report was sent to the Auditor General. Results Oriented Monitoring (ROM) was carried out on one occasion in 2010, and the final evaluation commenced in September 2013.

3.3.2 Extent of which costs have been justified by the benefits

Q. Extent to which the costs of the project have been justified by the benefits whether or not expressed in monetary terms in comparison with similar projects or known alternative approaches, taking account of contextual differences and eliminating market distortions?

The disparity of the anticipated rehabilitation costs per kilometre is noted from the WSP design of 2004, the cost as anticipated in the FA and the initial tender costs for the entire 72km, which prompted a re-think in terms of budgeting. Even then, the variation in tender costs between the tender for the first 30km and the second 42.8km was substantial. The Contractor maintained that this was due to increased prices, the further deterioration experienced by the road since the design, and exchange rate fluctuations; eventually a discount of 5.5% was negotiated for the second contract. It was also noted in the AG audit of the road sector that the tender for the second lot was not very competitive, as only two bids were received and one of them was not technically compliant. This was due in part to the obvious advantage that the incumbent Contract (CGC) had due to it being already set up in the area; the fact that many big Contractors were otherwise engaged in civil works leading up to the 2010 World Cup in South Africa; and the fact that there were a limited number of Contractors registered in Zambia that were capable of carrying out works of such a magnitude.

In general the project was deemed to be within time and budget, which is quite rare in projects of this nature. It was noted that the quality of the Monze-Zimba road was equally good (having stood the test of 10 years of time), however this project went to arbitration on the various claims. It was considered that the Chinese companies were not well versed in making claims and had a greater desire to please the Client and thus gain more work.

It is considered that the cost per kilometre is comparable to recent cost estimates for works of a similar nature in Zambia and in that sense may be said to have provided value for money. There must inevitably be some concern that costs per kilometre have increased to four times the original EU provision made in 2006, even though (as shown in Section 3.1.4) it appears clear that the project did still achieve satisfactory economic viability.

3.3.3 Partner country contributions

Q. Partner country contributions from local institutions and government (e.g. offices, experts, reports, tax exemption, as set out in the LogFrame resource schedule), target beneficiaries and other local parties: have they been provided as planned?

There can be no doubting the commitment of GRZ in terms of providing finance for the project. The commitment was high as can be evidenced by the fact that funding was provided in total for the first 30km (100%) and the major portion of the 42.8km contract (67%). In addition, participation was regular at the monthly meetings (usually RDA was represented by the Provincial Road Engineer (PRE)). There were reported problems with Duty Exemption; however some of this was due to inaccurate submissions by the Contractor, and although complaints were made, ultimately they did not lead to additional claims.

The success of the partner contributions in terms of continuing the institutional reform can be considered partial. There were upheavals in the institutions due to the removal of senior personnel. Advances were made in the important area of axle load control, though many challenges still remain.

3.3.4 Provision of EC HQ/Delegation inputs

Q. Commission HQ/Delegation inputs (e.g. procurement, training, contracting, either direct or via consultants/bureaux): have they been provided as planned?

The EU Delegation was involved in the process and attended many of the liaison and monthly progress meetings. It was reported that the Delegation was in the 'firing line' due to the failure of the initial tender and the very poor state of the road. To some extent the level of bureaucracy contributed to the delays, which led to considerable disruption to the travelling public. The EU requested headquarters that they negotiate directly with the compliant bidder in the first tender, but the advice was that this could not happen because the available budget had been exceeded by a considerable amount. In the meantime there had been an outcry from the travelling public due to the deterioration of the road and GRZ decided that they could wait no longer.

Due to the likely length of time involved in a design review and re-tender, the GRZ decided to tender and award a contract for the first 30 kms whilst the preparations were ongoing to re-launch a tender for the second contract. While this decision contributed to the lack of competition in the second tender, there were strong reasons for going ahead quickly with the first 30 km.

Payments were delayed at some stages by both EU and GRZ. There were delays in processing due to changes in the system. The Contractor stated that he would make a claim for interest, the SR advised of the entitlement according to the Contract. Ultimately the Contractor decided not to pursue the claim for interest on delayed payments. The EU ensured

that the Technical and Financial audits were carried out in good time. This required an amendment to the budget lines in the FA as they had not been originally envisaged.

3.3.5 Efficiency of TA

Q. Technical assistance: how well did it help to provide appropriate solutions and develop local capacities to define and produce results?

There was no specific TA provided through the contract; however, an international Consultant was employed to administer the site activities and the Powers of Delegation were properly conferred by the Supervisor (RDA) to the SR. In addition TA had been provided during the 9th EDF to the sector institutions. This was partially successful and has been evaluated separately. TA was also employed to the Office of the Attorney General, funded mostly by DANIDA.

3.3.6 Quality of monitoring and use of baseline info

Q. Quality of monitoring: its existence (or not), accuracy and flexibility, and the use made of it; adequacy of baseline information?

The LFT was not used as a management tool. The works contract was monitored through the use of the programmes of works and progress reports produced by the Supervisor's Representative (SR). One ROM mission was carried out in 2010. Baseline information was not collected specifically for the LFT OVIs; however, baseline information is available in the original design documents on parameters such as traffic flows, road condition, vehicle operating costs and economic feasibility.

3.3.7 Unplanned outputs

Q. Did any unplanned outputs arise from the activities so far?

There were no particular unplanned outputs arising from the activities. The number of accidents due to over-speeding was reported by several respondents in the field to have increased; however, this is to be expected in projects of this nature. The contract could have included more comprehensive mitigation measures including the carrying out of road safety audits, and we have included recommendations to this effect.

3.4 Achievement of Wider Effects (Impact)

TOR Extract
The term impact denotes the relationship between the project's specific and overall objectives.

3.4.1 Extent to which project objectives have been achieved

Q. Extent to which the objectives of the project have been achieved as intended, in particular the project planned overall objective?

The Overall Objective (OO) was the 'Promotion of equitable economic growth, regional integration and poverty reduction in Zambia'. It can be expected that the rehabilitation of any portion of the North-South Corridor would contribute to the OO. The following are very definite and positive impacts to which the road rehabilitation has contributed:

Quality of Road and Contribution to Development
Many people interviewed have expressed the view that the Zimba to Livingstone road is 'the best in the country' and other Local Authorities have visited Livingstone in order to gain from the experiences of infrastructure development, which has been very positive in the case of

Livingstone. In addition to the newly constructed roads, Livingstone now has a new airport terminal, and a new bus station and new market are currently under construction.

New Airport Terminal

Bus Station under construction

New Market under construction

Increased Employment

The Works Contract was a great source of local employment and the Contractor variously employed 200 up to 650 people at the peak. The percentage of females employed was low at 3 to 5%.

Increase in Traffic and Reduction in Travel Times

The growth in traffic has exceeded expectations, being approximately 10% per annum since the construction of the road. Travel times have certainly reduced by approximately two thirds. It takes an average of less than one hour to travel from Zimba to Livingstone, whereas it

used to take 3 hours or more. The household interviews revealed the following current travel times:

Table 5 Current Travel Times

	Village			
	Buiketo	Musa	Kabanje	Kwatoku
	Mean(min)	Mean(min)	Mean(min)	Mean(min)
Food market 2012	49.60	21.83	61.43	14.00
Post _ office 2012	56.88	45.33	61.43	26.33
Community school 2012	5.93	34.00	85.93	.00
Basic School 2012	19.06	19.58	4.00	.33
High school 2012	63.12	55.17	59.14	7.00
Hammer mil 2012	25.88	22.10	13.43	2.33
Shop centre 2012	57.00	44.60	62.57	18.67
Police station	63.48	61.17	61.43	26.33

With respect to travel costs, the situation has remained largely unchanged. In terms of availability of transport, the meetings conducted in the area revealed that there are more vehicles using the road compared to last year. Traffic volume is said to have drastically improved not as a result of improved condition of the road but that there are more vehicles in the district. A lot of road traffic accidents had also been witnessed which the residents attribute to the bad condition of the road.

Improved Access to Markets

It is much easier now for farmers in Choma and Kalomo and environs to deliver produce to Livingstone and the lodges. It used to be very difficult to source fresh vegetables in Livingstone due to the difficulty of access and the fact that vegetables would get spoiled in transit. The road link has also improved travel to the Western province. The soil around Livingstone is not conducive to farming and growing of crops. There has been a huge increase in local trade due to the road, and a reported economic empowerment of local residents as a result. It is noted that there are a number of roadside markets, particularly at lay-bys.

Roadside Market at Layby

Vegetable selling as a means of assisiting poverty reduction in the area

Increased Revenues due to an Increase in Commercial Traffic

Revenues have also increased as increased numbers of trucks implies increased numbers of transactions and tonnages and increased revenue take by the Zambia Revenue Authority (ZRA).

Increased Revenue for Kazungula District Council

The prime source of revenue for Kazungula District Council is a levy imposed on vehicles entering or leaving the country at the ferry. This levy amounts to approximately 30% of the total revenue take for the District Council. The revenue has reportedly increased from approximately K800,000 in 2010 to an anticipated K1,200,000 in 2013. Approximately 35 km of the Zimba to Livingstone road passes through Kazungula District, and the road also assists connectivity between the two sides of the District.

Queue of trucks at Kazungula Border. Traffic is likely to increase further as soon as the bridge is built

Increase in Household Revenues

The data collected through community and household interviews has revealed that a good proportion (54%) of women interviewed see the road intervention as an enabling factor that has helped them broaden income base for their households. This view is also in line with the focus group discussions which revealed that the number of people trading at one point has increased. This view was however, difficult to validate as many of the people trading at these laybys had difficulties in remembering what transpired five years ago. The study has also revealed that – in all the four communities where the interviews were conducted – there has been a slight increase in annual income from the time road was constructed to date (see the table below).

Table 6 Average Household Incomes before and after Construction

	Buiketo	Musa	Kabanje	Kwatoku
	Mean	Mean	Mean	Mean
INCOME BEFORE	2724.4	11546.7	10	0
IINCOME AFTER	3637.8	14253.3	50	66.7
	913.4	2706.7	40	66.7

Increase in Tourism

There has also been an increase of tourists heading north although this is still quite low, as access to Kafue National Park from the south tends to be seasonal. Investments are planned in the Kafue National Park, and access to the Southern side of the Park is via the T1 trunk road from Livingstone to Kalomo to Dundumwezi.

The world-renowned Victoria Falls

It was stated that the condition of the road before repair gave Zambia a bad image, as it would be one of the first things that visitors to Zambia by road would remark on. In the past some tourism developments in Livingstone were awarded tax-free status in an effort to boost tourism and the Ministry of Tourism is currently in discussions with the Ministry of Finance over a continuation of some concessions. Since the construction of the road international tourist numbers have recorded a steady increase, while the number of local tourists to Livingstone is said to have increased dramatically. The holding of the World Tourism Conference in Livingstone/Victoria Falls was a great boost to the City and has helped to tidy up the streets and buildings. The Zambia Wildlife Authority (ZAWA) also received funds in order to boost their infrastructure. Currently Livingstone has a capacity of approximately 2,000 bed nights.

Garden at Natebe Dam – source of vegetables

Mubiana Dam – the community has indicated that the Contractor caused damage to the spillway when accessing the dam for water abstraction and did not compensate the community

Livestock

Most households along the road still have livestock, which include chickens, goats, and pigs. In the sampled community, there are few households with cattle. According to community consultations conducted, the animals are kept mostly for domestic use and sold only in periods when the families need extra income. Asked as to whether they were rearing animals or not before and after road construction/rehabilitation, all households (100%) said that they reared livestock before construction of the road in all the sampled communities and after construction Kwatoku community said they did not remain with any.

Althogh the departments of Agriculture (Zimba and Livingstone) indicated that much as the road had contributed to the now improved provision of extension services, improved and timely delivery of farming inputs, it had also contributed to the reduced livestock levels in the district due to cattle rusttling. Conversely, consultations with the community revealed that the dwindling livestock levels were also due to (i) the increasing poverty levels which force households to resort to selling livestock, (ii) increased market for livestock, especially chickens at laybys due to an increased number of cars, and (iii) availability of transport to Zimba and Livingstone markets.

Village		Total Livestock before (K)	Total Livestock After (K)
Bwiketo	Average	14.1	9.7
	Sum	367.0	251.0
Musa	Average	19.3	9.3
	Sum	116.0	56.0
Kabanje	Average	15.1	10.0
	Sum	106.0	70.0
Kwatoku	Average	10.0	.0
	Sum	30.0	.0
Total	Average	14.7	9.2
	Sum	619.0	377.0

Although the study on the comparison of the community income and expenditure before and after road rehabilitation has revealed that there has been an improvement and increase in individual household incomes and at sampled community level, consultations have revealed that the increase cannot be directly linked to the improvement of the road. There are a number of factors, which were cited and these include increased support to small-scale farmers by government between 2008 and 2011 and funds remitted by relatives and children from other towns.

Similarly, an increase in expenditure has also been linked to factors other than the road and these include hikes in fuel pump prices (leading to an increase in prices of food stuffs and consequent high cost of living), increased household size etc. The table below shows the exact aggregated changes that have taken place in terms of income earned at community level and expenditures made before and after road rehabilitation.

Village		Total Income (K) before(2008)	Total Income (K) after(2012)	Total Expenditure (K) before(2008)	Total Expenditure (K) after(2012)
Bwiketo	Average	2724.4	3637.8	1069.0	2016.5
	Sum	59937.0	83670.0	21380.0	40330.0
Musa	Average	11546.7	14253.3	16526.7	18326.7
	Sum	69280.0	85520.0	99160.0	109960.0
Kabanje	Average	10.0	50.0	3040.0	3780.0
	Sum	70.0	350.0	21280.0	26460.0
Kwatoku	Average	.0	66.7	346.7	496.7
	Sum	.0	200.0	1040.0	1490.0
Total	Average	3402.3	4352.3	3968.3	4951.1
	Sum	129287.0	169740.0	142860.0	178240.0

Effect on Education

The project road passes through Zimba, Kazungula and Livingstone districts and the statistics from the schools visited are outlined below.

Livingstone District

Natebe Dam Community School

Before the rehabilitation of the road in 2008, Natebe Dam Community School recorded a total of 131 pupils, of which 80 were males. After construction of the road, the total enrolment had reduced to 119 pupils, with 53 being males. The reason cited for the drop in the enrolment figure for boys was early marriage. Contrary to the perception and expectation of the community where girls are forced into early marriages, the school authorities interviewed indicated that in the Natebe area and specifically at school, more boys go into early marriages compared to girls.

According to details gathered from school authorities, the school has recorded a mild rise in the overall dropout rates from 10% in 2008 for both sexes to 11% in 2012. The reason given for the 1% increase in drop out cases is the shortage of teachers - a common problem in all the community schools countrywide before they were taken up by government in 2013. Attendance rate per week has generally been impressive at Natebe. Before road rehabilitation, the school recorded 80% attendance rate in 2008, which rose to 90% in 2012. According to school authorities, the sustained impressive attendance rate is attributed to the continuous sensitisation of parents on the importance of education by the school.

With respect to the number of teaching staff and availability of teaching material, the study has revealed that there is a significant improvement, from 2 teachers in 2008 to 4 teachers by 2012 and from 50% to 90% respectively. Because of an increase in the number of teaching staff, the Pupil teacher ratio is said to have significantly improved as well from 1:65 to 1:30. As earlier stated, the improved staffing levels and teaching materials at school are due to Government intervention. This has also resulted in reduced attrition rates among teachers compared to pre 2008 years. In terms of changes due to travel time to reach the District Education and or Provincial offices, the authorities indicated that from School to

tarmac (3.5km stretch) travel time (walking) has remained the same (45 minutes) and the tarred stretch (10km to DEBS office) could take 35 minutes before construction and now takes 15 minutes driving.

Kazungula District

Makoli Primary School

Before rehabilitation of the road in 2008, the School had a total of 352 pupils, of which 154 were females. After construction of the road, the total enrolment had gone up to 393 pupils, with 156 being females. The major reasons attributed to the increase in the number of pupils are (i) the Government policy on the introduction of free basic education and, (ii) the improved Zimba Livingstone road. According to details gathered from school authorities, the school has recorded a significant improvement in the overall dropout rates recorded in 2008 compared to 2012 from 12 cases for female pupils to 7 and 5 male cases to only 3. Attendance rate per week has generally not been very impressive. For instance before road construction, when overall enrolment stood at 352, only 270 attended school per week and 82 pupils did not. After road improvement, the attendance rate showed an improvement. A total of 355 out of 393 pupils attended school/week. The improvement is attributed to the road rehabilitation and presence of NGOs in the district supporting in infrastructure development.

Regarding the number of teaching staff and availability of teaching materials, the study has revealed that there is a significant improvement, from 10 teachers in 2008 to 12 teachers by 2012 and teaching materials had also improved. Because of an increase in the number of teaching staff, the pupil teacher ratio is said to have significantly improved as well from 1:35.to 1:33. The improvement is attributed to the improved road which has resulted in improved transport services in terms of availability and reduced travel time - factors said to have resulted in improved teacher retention and general willingness of teachers in the schools far off the tarmac to want to transfer to Makoli School.

Travel time has reduced from 2.5 hours to 1 hour for the school authorities to access services at the district educational offices.

Kabuyu Basic School

Due to the robust investment into the infrastructure development experienced at the school over the past few years, the School has recorded a significant rise in enrolment from 189 pupils to 581. The financial investment is said to have come from Non-Governmental Organisations. According to details gathered from school authorities, the school has recorded a significant improvement in the overall dropout rates recorded in 2008 compared to 2012 from 6 cases for female pupils to 2 and 9 male cases to 5.

Attendance rate per week has improved from 65% to 78% and this has been attributed to financial assistance from NGOs. Regarding the number of teaching staff and availability of teaching material, the study has revealed that there is an improvement, from 6 teachers in 2008 to 12 teachers by 2012 and teaching materials had also improved from 70% to 88%. Because of a significant increase in the enrolment rate, the pupil teacher ratio is said to have drastically been affected from 1:32 to 1:49. Travel time has reduced from 45 minutes when travelling to The Provincial Education Office (PEO) office to 15 minutes due to improved road.

Woodlands Primary School

Before rehabilitation of the road in 2008, the School had a total of 112 pupils, of which 52 were males and 60 females. After construction of the road, the total enrolment had gone up to 124 pupils, with 62 being females. Attendance per week improved from 60% to 90%. According to the study results, the school has recorded a significant improvement in the

overall dropout rates recorded in 2008 compared to 2012 from 4 cases for female pupils to 2 and 5 male cases to only 1. Reasons advanced include improved staffing levels as well as infrastructure development at the school.

Regarding the number of teaching staff and availability of teaching material, the study has revealed that there is a significant improvement, from 3 teachers in 2008 to 6 teachers by 2012 and teaching materials had also improved from 60% to 75%. Because of an increase in the number of teaching staff, the Pupil teacher ratio is said to have significantly improved as well from 1:38 to 1:21. Reasons advanced include improved staffing levels as well as infrastructure development at school. Travel time has reduced from 45 minutes to 15 minutes.

3.4.2 Facilitation/ constraints of effects by external factors

Q. Whether the effects of the project have been facilitated/constrained by external factors?

The road has contributed to the economic development of Livingstone but this has not been the only factor. It was noted that there is a new airport terminal in Livingstone and the runway can accommodate international flights from South Africa and Kenya. Also in the transport sector, a new inter-city bus terminal is being constructed. There is a new market, City and Township roads have been worked on and in general the City was given a facelift in order to accommodate the World Tourism Organisation Conference, held in Livingstone in September 2013. The Livingstone Tourism Board and Ministry of Tourism are housed in relatively new offices, and brochures are available which give an outline of the various attractions and accommodation available. This information was not readily available when ASCO (Z) Ltd (local consultants) carried out a Master Plan for Livingstone in 1996/7.

New Hotel David Livingstone

New hotels and lodges have been constructed in Livingstone in the last 5 years. Previously the Livingstone Museum was rehabilitated with EU support, and the newest museum, which celebrates the Jewish heritage of Livingstone, recently opened its doors to the public within the existing Railway Museum.

These developments have complemented each other and have contributed to the development of the tourist capital.

3.4.3 Unintended impacts

Q. Whether the effects of the project have produced any unintended or unexpected impacts, and if so how have these affected the overall impact?

Vandalism

It has been noted that theft of road signs and reflective plates has been a recurring problem. It was noted also that galvanising of the signs was recommended after the perforation. Lean mix concrete was placed over gabions to discourage theft of the steel wire.

Perforated signs as a measure to protect against vandalism – only partially successful

Not necessarily vandalism; however there are several cases of kilometre and ordinary marker posts that have been bashed by vehicles

Shift of Provincial Headquarters

The declaration of Choma as the Provincial capital (from Livingstone) has had the impact that the Provincial administration has had to vacate offices in Livingstone and search for new accommodation in Choma. Land is not easy to source in Choma due to the presence of large farms and it will take some time before this change is fully effected.

Traffic Accidents

It is variously reported that many accidents used to occur due to the poor condition of the road; however, accidents are also now occurring due to the newness of the road and due to over-speeding in particular. The Police have reported that the prime causes of accidents are due to the tiredness of truck drivers which often travel at night. Accidents also occur due to wandering domestic animals and cows. The Police also consider that the road signage is limited. Whilst the SR was still on site it was reported that many accidents occurred in the first half of 2011, and the likely causes were reported as over-speeding, driver fatigue, night driving and boredom.

Some of the accidents cause damage to the road, and it is vital that RDA is prepared to deal with the necessary repaired expediently to avoid progressive damage to the roads. This was noted on a number of occasions during the project.

A road safety audit carried out by the Road Transport and Safety Agency (RTSA) in May 2012 made the following comments on the Zimba-Livingstone road section:

- The large reinforced concrete kilometre posts pose a safety hazard,
- The transition in level from carriageway to shoulder is 'undesirable',
- Severe side-slopes should be protected with guard-rails,
- Some road markings encourage overtaking near the brow of a hill, notably near Km 22 and Km 26,
- Speed zones are required in pedestrian sensitive areas,
- The guard-rails should be anchored to the railway bridge at Km 51.

Influx of villagers
It is reported that the improved access has led indirectly to an influx of villagers into Livingstone. This can lead to a shortage of housing and poor social conditions.

Environmental Issues
The interviews with keys informants and communities have revealed that the rehabilitation of the road has had a number of unintended effects. The community submitted that the contractor disregarded the verbal contract agreed with the community of dredging the dam after abstracting the water from it. The over abstraction of water and the consequent shallow depth resulted in the drying up of the Natebe community dam - thereby affecting 80 %(4/5) of the main vegetable farmers who were the only source of vegetables in the three communities – namely Natebe dam, Natebe community and Kasiya resettlement area.

The community consultations in Mubiana Village also revealed that the contractor did not only disregard an agreement signed with the community for abstracting water from the dam but also contributed to the bursting of the dam wall caused by the deliberate blocking of the spillway at Mubiana dam. This effect resulted in approximately 31.4% of the families located along the stream losing their vegetables and other agricultural fields. It was further revealed that no financial or in kind compensation was given to the affected group of farmers.

The study has also revealed that the construction of detours has in certain instances resulted in some families losing their cultivated (7.1%) and owned (11.9%) land. This phenomenon has been compounded by the ripping of culverts by the contractor, which has resulted in the community not being able to use the detours either with bicycles, oxcarts and or any motorable means of transport.

Revival of Chamber of Commerce
The Chamber of Commerce in Livingstone was dormant for many years; however, in line with the increased economic activity in recent years (partially due to the construction of the new road), it was reformed in 2010 and currently has 30 paid up members and meets on a monthly basis. The Chamber represents firms such as Banks, Insurance companies and Small and Medium Enterprises (SMEs). The downside is that, with the shift of the Provincial Headquarters from Livingstone to Choma, some of the businesses in Livingstone will be less prominent.

3.4.4 Coordination arrangements

Q. Whether the effects of the project have been facilitated/ constrained by project/ programme management, by co-ordination arrangements, by the participation of relevant stakeholders?

The RDA conferred the Delegation of Powers to the SR in April 2009 and the Contractor was subsequently informed. The roles and responsibilities were clear between the primary stakeholders of RDA, Contractor, Consultant, EU and NAO, and the participation of all parties was appropriate to the needs.

The monthly HIV/AIDS awareness campaigns increased the interaction with the local communities, which was positive. It is considered that activities such as these can be expanded in future to provide more positive interaction with the communities. It seems that the Contractor negotiated directly with the communities for the use of borrowpits and the construction of dams as sources of water for construction. The RDA requested the Contractor to deal with these landowners in the presence of RDA personnel; however, it is clear that this process was not well monitored.

It is fair to say that, in general, there is a need for better prescription of environmental activities and the insertion of pay items in bills of quantities to provide incentives for a Contractor to carry out his environmental responsibilities, as otherwise there are many grey areas that are difficult to monitor. An Environmental Management Plan should be part and parcel of the contract documents.

3.4.5 Socio-economic development

Q. Whether the effects of the project have contributed to economic and social development?

Zambia's population currently stands at **13.88 million** and is growing at a rate of **2.8%** (rural 2.1% and urban 4.2%) (CSO growth rate estimates of 2010).

During 2005 – 2011, the country grew at 6.6% per annum (IRENA Zambia, 2013), largely driven by agriculture, tourism, manufacturing and mining. Overall, the economy is expected to grow at 7% in the short term. Zambia needs to grow at least at 8% per annum to eradicate extreme poverty and hunger, which is the first Millennium Development Goal (MDG 1).

In the longer term (to 2023) a lot depends on the political stability (which will affect the country's credit rating), copper prices, employment and income levels. In 2011 employment levels were concentrated in services (43.5%) agriculture (21.4%) and industry (35.1%), with an unemployment rate of 13% (rural 7.4% and urban 22.1%[6]).

Socio-impact baseline and monitoring studies were carried out for various road projects in 2008/10 and funded by the EU. These studies pointed to very definite socio-economic impacts as a result of infrastructure development. The survey reports contain a substantial amount of data, which are very useful when looking at each individual road, but do not readily facilitate assessment of the overall socio-economic impact of improving TMD roads.

It was reported that the Environmental and Social Management Unit (ESMU) in RDA needs assistance to identify how best to use all this information, and to determine what changes to make in connection with future socio-economic impact monitoring.

3.4.6 Poverty reduction

Q. Whether the effects of the project have contributed to poverty reduction?

Zambia is a lower middle income country with a Gross Domestic Product (GDP) per capita of **US$1,600** (2011) and is vying to be a prosperous middle income country by 2030 (Vision 2030). Upper middle income would imply a per capita income above **US$6,000**. The required

growth rates to achieve that target are 8% for 2011-2015, 9% for 2016-2018 and 10% for 2021-2030 (ref Vision 2030).

It was noted that GRZ constructed other roads following the completion of the Zimba to Livingstone road through GRZ funding. An extension was awarded to the Contract B for the construction of City Roads including Airport, Kaunda and others. In addition 21 roads were upgraded to the heavily populated compound areas in order to also bring benefits to the poorer residents of Livingstone.

From the focus group discussions conducted for traders – it has been established that a lot of women are now engaging in a number of economic activities thereby contributing to the wellbeing of their families. The study results have also revealed that household trading by the roadside at the nearest layby, in 2012 (K456.10) made more money than they did in 2008 (K293).

Poverty is multi- faceted and requires a holistic approach in combating high levels. The rehabilitation of the road saw an increase in the levels of income for most people in the area resulting from improved trade activities. Based on existing conditions, the project contributed to creating an enabling environment for trade to flourish and ultimately enhance the livelihood of surrounding communities with the availability of more disposable income to spend for other family needs.

At an overall level, the results of the study cannot conclusively state that the project has directly contributed to poverty reduction, as other aspects of poverty were not considered in the review. The project contributed to improvements in transportation and access to social services as evidenced by the changes in the attendance of school children. It must however be noted that other factors could have contributed to these changes such as Government policy. It is therefore presumed that the project contributed to improving conditions necessary for poverty reduction.

3.4.7 Cross-cutting issues

Q. Whether the effects of the project have made a difference in terms of cross-cutting issues like gender equality, environment, good governance, conflict prevention etc.?

The ROADSIP II document from October 2003 stated that one of the key activities was to increase awareness and condom distribution to construction workers to prevent transmission of HIV/AIDS. It was envisaged that a service provider would be needed to assist before the arrival of the contractor with awareness raising activities among local community members. It also stated that it was imperative that a realistic HIV/AIDS strategy should be developed and integrated into the ROADSIP II programme, and also emphasised that HIV/AIDS interventions need to be monitored and evaluated.

A total of three service providers were used in order to carry out the HIV/AIDS awareness activities (Network of People Living with HIV/AIDS initially; New Start Centre to May 2010; Corridors of Hope from June 2010). These carried out HIV/AIDS awareness using drama. Condoms and IEC materials were distributed, and testing and counselling were provided. These activities were carried out and reported on a monthly basis from September 2009 to September 2010. It was reported that the Contractor did not continue these activities after this date. The activities took place both at the Contractor's camp and at Senkobo Quarry.

There was a low percentage of females employed on the project and it was reported that there is a cultural bias against the employment of women on road projects in Zambia. Gender issues are not just concerned with employment, however, and the forum of community consultations could be used in future projects in order to promote gender awareness and to tackle perceived disparities between the sexes.

Borrow pits were reinstated in accordance with the provisions of the contract; however, on one occasion a landowner requested that a borrow pit remain open as a watering point for animals. The evaluators received representations from community members to the effect that the Contractor did not carry out agreed activities for the benefit of the communities in return for services provided. This is difficult to verify at this stage; however, we are in favour of a more prescriptive approach in the design of these activities in future projects.

While there is evidence suggesting that the rehabilitation of the road has increased the uptake of health services especially in areas such as Natebe and Kasiya among others- it was difficult to access health related information from the district health officials. It is therefore difficult to deduce whether the increased access to health service is as a result of the road project or it could be attributed to other factors.

3.4.8 Economic growth

Q. Whether the effects of the project were spread between economic growth, salaries and wages, foreign exchange, and budget?

The 9th EDF design, as outlined in the CSP, was an adequate response to the actual needs; however, several governance issues affected the implementation of the programme negatively. The 2009 Office of the Auditor General's audit revealed major over-commitment, weak design and supervision, poor contract management, and systematic over-engineering of the Core Road Network (CRN) rehabilitation by the Road Development Agency.

The EU duly suspended the final SPSP1 disbursements and the launch of SPSP2, pending corrective measures by GRZ. At the time it was recommended to engage in an exit strategy from the road sector by first maximising the Road SPSP II focus on rural transport; however, in effect the sector budget support programme did not resume and programming is in place for a shift to energy as the focal sector for the 11th EDF.

The interviews with the traders at the roadside revealed that the daily sales had reduced significantly from 2008 to date due to the increase in the number of trading points and also lack of humps on the main road which has resulted in vehicles not stopping. The study also established that traders are now spending relatively less time to transport commodities from one district to another. Before the road was rehabilitated it would take more than 2 hours to cover a distance of more than 40 km - and now, it only takes about 30 minutes to cover the same distance.

3.5 Likely continuation of achieved results (Sustainability)

TOR Extract
The sustainability criterion relates to whether the positive outcomes of the project and the flow of benefits are likely to continue after external funding ends or after non-funding support interventions (such as: policy dialogue, coordination).

3.5.1 Ownership

Q. The ownership of objectives and achievements, e.g. how far all stakeholders were consulted on the objectives from the outset, and whether they agreed with them and continue to remain in agreement?

The primary target group for this project was the road users. Investment in rehabilitation and maintenance directly translates to savings in Vehicle Operating Costs (VOCs), which benefit

to all road users. The broader target group is the population living along the corridor route. In particular the population living along the section to be rehabilitated has benefited during the works due to increased access to employment opportunities. This benefit should also be extended after the completion of works, when routine maintenance will be carried out by engaging local Contractors to carry out works, and in fact the Provincial Road Engineer's Office is currently in the process of letting these contracts for the Zimba to Livingstone Road.

Tourist operators have benefited due to improved access to Livingstone, and the Ministry of Tourism has reported a large increase in the number of local tourists to Livingstone, which they ascribe to the project.

The key stakeholders in the road sector are the management and staff of the RDA and NRFA in addition to Contractors and Consultants from the private sector. Road users are represented on the Boards of these agencies. Ultimately the benefits will extend to:

- Governmental Organisations, namely the RDA and GRZ officials, mainly due to a reduction in the cost of routine and periodic road maintenance
- Non-Governmental Organisations, namely all road users, private and commercial, local businesses, the agricultural community and the employable local community.

Stakeholders include Government as a whole, farmers and businesses along the road, the tourist sector, and the residents of Livingstone and the whole road's hinterland up to Zimba. The reconstruction of the road was a high priority for all stakeholders; however they were not widely consulted at the design stage.

3.5.2 Policy support

Q. Policy support and the responsibility of the beneficiary institutions, e.g. how far donor policy and national policy are corresponding; the potential effects of any policy changes; how far the relevant national, sectoral and budgetary policies and priorities are affecting the project positively or adversely; and the level of support from governmental, public, business and civil society organizations?

The following institutions have been almost 10 years in existence and are now operational:

Road Development Agency (RDA)
The RDA is responsible for planning, programming, procurement, supervision and monitoring of all road works, to be undertaken by contract account. The guiding programme is ROADSIP and the RDA prepares annual workplans and budgets for implementation.

National Road Fund Agency (NRFA)
This agency replaced the National Roads Board (NRB). It co-ordinates all resources for funding of the road sector, whether from the GRZ, international funding institutions or the private sector. It is responsible for collection, disbursement, management and accounting of the National Road Fund and reports through the Ministry of Finance and National Planning.

Road Transport and Safety Agency (RTSA)
This Agency is responsible for transport licensing and traffic safety. The three bills establishing the agencies were approved by Parliament in December 2002.

Road improvement and maintenance in Zambia is co-ordinated through a donor-assisted Road Sector Investment Programme (ROADSIP). The principal objectives of the programme are to:

- Improve the condition of the core network of roads
- Strengthen the management of the road sector
- Create employment opportunities

- Improve road safety
- Improve environmental management
- Improve rural transport services
- Improve community roads.

Under the Country Support Strategy (2008 – 2013), donor and national policy converged in respect of the important EU goal of supporting the ROADSIP II Programme. The importance attached by GRZ to the rehabilitation of the Zimba to Livingstone road was emphasised when it unilaterally applied its own resources to the rehabilitation of the first 30 kms by separate contract.

The importance of Axle Load Control has been recognised and an axle load control programme (ALCP) was supported by NORAD and EU since April 2004. The NORAD review in 2009 concluded that the programme was generally satisfactory, although procurement and installation of weighbridges were unsatisfactory due to delays in land acquisition and cost overruns for equipment and site works. Overall, it was concluded that provision, installation and implementation of the computerised and remote control vehicle overload management system (VOMS) was successful alongside satisfactory institutional development.

A check at the weighbridge in Livingstone revealed that heavy traffic has increased from 3 to 4,000 trucks per month in both directions to approximately 6,000 since the construction of the road. Due to the controls imposed by the new weigh station (built in 2010), incidences of overloading are reputed to have reduced from 80 to 50 trucks per month. Abnormal loads travel via Sesheke due to the presence of a bridge and fees are paid to allow these trucks to travel on the Zambian roads. Trucks are mostly laden heading north and many are empty heading south. The Police are also on duty at the weighbridge on a 24-hour basis. There is evidence that some heavy trucks (particularly local traffic) evade the weighbridge by using other routes; however, it seems that the level of control is far better than in the past. The weight of each vehicle is displayed publicly and the information is immediately transmitted to HQ in Lusaka. CCTV cameras have been installed in weigh stations to mitigate against the effect of interference in the recording of overloading.

Road condition surveys (RCS) constitute another basic requirement of road asset preservation. During the period of TA to RDA, RCS were undertaken annually in the years 2006-2009, but the routine was interrupted in 2010. Another GRZ-funded consultancy contract was undertaken in 2011/12 and the intention was to extend the current contract for 3 years.

Accident data collection and processing, by the Traffic Police, can certainly be improved, but there is a basic system in place. Traffic police in Livingstone were able to give anecdotal evidence of traffic accidents, but actual data were not made available to the Consultants. RTSA were able to avail data, but this was on a National basis. In 2012 the whole country recorded 28,247 accidents with 2,255 deaths; these numbers showed rates of 62.4 accidents and 5.0 deaths per thousand vehicles per annum; these rates are very high by international standards. The unassailable fact is that new roads bring with them the vice of over-speeding, which is a major cause of accidents, and many of these are fatal.

The RTSA carried out their own audit of the Zimba to Livingstone Road and concluded that, although they are situated off the road, the large marker posts can be a hazard to vehicles and it was noted that some of these were already bashed into by motorists.

A recent study carried out by the European Court of Auditors concluded that investments in the roads sector were not sustainable, due to a lack of funding by Governments towards maintenance and a general lack of enforcement of overloading regulations. The Court concluded that the EC is only partially effective in its support for a sustainable road network in sub-Saharan Africa.

3.5.3 Institutional capacity

Q. Institutional capacity, e.g. of the Government (e.g. through policy and budgetary support) and counterpart institutions; the extent to which the project is embedded in local institutional structures; if it involved creating a new institution, how far good relations with existing institutions have been established; whether the institution appears likely to be capable of continuing the flow of benefits after the project ends (is it well-led, with adequate and trained staff, sufficient budget and equipment?); whether counterparts have been properly prepared for taking over, technically, financially and managerially?

RDA participated directly in the project as Supervisor. The central importance of this agency to the national development effort has been reflected in the transfer of certain functions to the Office of the President.

According to a sector review, one of the main deficiencies of the road sector has been the neglect of higher education related to road construction in the University of Zambia (UNZA) and the Copperbelt University (CBU), and of vocational/artisanal training in the National Council for Construction (NCC). This is something to consider for future support.

The mechanisms have been put in place to ensure the continued flow of benefits. The relevant Acts are in place, the relatively new institutions have been formed (RDA, NRFA and RTSA), and a dedicated Road Fund is in place. The institutions have been evolving in order to meet the demand. Regular network monitoring and input to the Highway Management System also takes place and this forms the basis for the Annual Maintenance Plans.

The actual implementation of policies and programmes, management of the road sector, lack of accountability within the sector, Public Finance Management and others have been causes for concern for donors. Traditional donors (such as EU and DANIDA) have been re-directing much of their support from the sector. Other donors (mainly Chinese) and banking institutions have come to the fore.

The institutions will need to evolve positively in the future in order to ensure that the large investments in the road sector can be sustainable in the long-term.

3.5.4 Adequacy of budget

Q. The adequacy of the project budget for its purpose particularly phasing out prospects

It is known that large road construction cost increases occurred worldwide following the oil price spike and the economic recession, which impacted the world economy from 2008. There was also substantial further deterioration of the road between 2006 and 2009, following the heavy rains of 2007/08. Nevertheless, the overall increase in unit costs appears excessive and deserves further analysis.

Following the original design study of 2004 by WSP, the EU signed a FA in September 2006 for €15.0 million to fund reconstruction of the 72.8 km from Zimba to Livingstone, without co-financing by GRZ. This implied an estimated rehabilitation cost per km of **€206,000**. Following the failed tender of 2007, and the unilateral commencement of works by GRZ using their own resources on the seriously failed Km 0-30.0 section, EU participated under the same FA to launch a second co-financed tender for the remaining section in November 2008, which was awarded with CGC in March 2010. The estimated contract values were now €11.57 m for Contract A (to be financed by EU), and €23.95 m for Contract B (to be financed by GRZ). Over 42.8km the estimated contract price was now **€850,000** per km, representing an increase of in excess of 300% over the envisaged unit value in 2006.

It is positive to note that the RDA has launched tenders for the routine maintenance of the Zimba to Livingstone road, which cover items such as pothole patching, edge repair, vegetation control and replacement of stolen road signs. The work is divided into 2 Lots and the contracts are for one year renewable up to 3 years, targeted at Grade V and VI Contractors, and have an approximate value of K1.6m each.

3.5.5 Socio-cultural factors

Q. Socio-cultural factors, e.g. whether the project is in tune with local perceptions of needs and of ways of producing and sharing benefits; whether it respects local power structures, status systems and beliefs, and if it sought to change any of those, how well-accepted are the changes both by the target group and by others; how well it is based on an analysis of such factors, including target group/ beneficiary participation in design and implementation; and the quality of relations between the external project staff and local communities?

There was widespread acceptance of the need for this project by communities all along the road. Empowerment has been achieved to some extent due to improved access to markets and social amenities. Mini markets have been set up at lay-bys. It is reported that lodges in Livingstone can now get fresh vegetables from the hinterland and that travel costs have reduced.

It has been stated that the emphasis of ROADSIP has been on the upgrading of the paved network and there has been less emphasis on maintenance and on feeder roads as a result. ROADSIP II has not yet succeeded in reaching local beneficiaries through use of the length-man systems for labour-based maintenance methods, which would be a source of economic empowerment of local communities.

All village heads consulted by the consulting team – revealed that there was no meaningful community participation in the identification and routing of detours, identification and siting of borrow pits and quarries, and identification and siting of workers camps and in the identification and siting of water abstraction points prior to road construction. Most parts of the Zimba – Livingstone road (T1) fall in the traditional jurisdiction and therefore the Contractor was expected to fully engage the community in the identification and siting of all the above.

Contrary to the above expectations, it was revealed that the Contractor sited detours which ended up passing through people's crop fields, excavated gravel for road construction on people's farms, over abstracted water from community dams thereby causing discomfort and discontent as he was perceived not have respected the traditional structures.

3.5.6 Financial & economic sustainability

Q. Financial sustainability, e.g. whether the products or services being provided are affordable for the intended beneficiaries and are likely to remained so after funding will end; whether enough funds are available to cover all costs (including recurrent costs), and continue to do so after funding will end; and economic sustainability, i.e. how well do the benefits (returns) compare to those on similar undertakings once market distortions are eliminated?

The bulk of the formal road network was constructed during the first decade after Independence, and gradually deteriorated due to the lack of adequate maintenance through to the mid-1990s.

Improvement of the road sector was identified in Zambia's PRSP in 2002 as the single most

important means to address and combat poverty. The density of the core road network is 0.053 in km/square and 0.029 in km/capita. The percentage of international and domestic passenger and freight services carried by road is above 80%, which has also resulted in increased pressure on the roads.

The road network assets need to be sustained with the money generated by the national motor vehicle fleet (through fuel levy, license fees, etc.). The greater the road network length or the smaller the vehicle fleet size, the less likely is the network's sustainability. In order to maximize the income from licence fees, it is important that all 'active' motor vehicles are registered and licensed. The current number of registered vehicles was 452,600 in 2012, showing an average 18.2 % annual increase from 140,200 in 2005.

To a large extent the project will not be financed by user fees, other than those paid by road users through the fuel levy on all fuel purchases. Nevertheless, the question of ensuring sustained and timely funding of the level of routine and periodic maintenance required to preserve the investment is of great importance.

Regular maintenance of the 40,000 km CRN requires an annual budget of €190m. With its own resources (fuel levy and other road user charges), the NRFA can address no more than 46% of CRN maintenance needs. RDA, against repeated EU advice in policy dialogue platforms, contributed to this structural imbalance by constructing new roads and by paving roads irrespective of traffic levels.

The results of the economic analysis at the feasibility stage indicated an economic internal rate of return of 23.0%. The sensitivity analysis for a 20% higher investment together with a 20% reduction in benefit yielded an EIRR of 15%, which indicated an economically viable project.

In the long term a report carried out on the 'Economic Benefits of an Efficient North-South Corridor' (Alta Innovations, 2009) concluded that the primary aim should be to assist developing countries to increase exports of goods and services, to integrate into the multilateral trading system, and to benefit from liberalised trade and increased market access. In this context, the Common Market for Eastern and Southern Africa (COMESA), the Southern Africa Development Community (SADC) and the East African Community (EAC) have established a Regional Trade Facilitation Programme (RTFP) to study and develop initiatives and measures for improving transport infrastructure in the region. This should reduce the cost of doing business through a reduction in transport cost and travel time. This study has demonstrated that there is an attractive rate of return to be realised from investment in the North–South Corridor.

The North-South Corridor runs from the port of Dar es Salaam in Tanzania to the Copperbelts of Zambia and DR Congo and down through Zimbabwe and Botswana to the ports in South Africa, taking in 'spur' connections to the Great Lakes in the north and to Malawi in the east. The Zimba to Livingstone Road is a part of the so-called 'North-South' corridor.

3.5.7 Technology issues

Q. Technical (technology) issues, e.g. whether (i) the technology, knowledge, process or service introduced or provided fits in with existing needs, culture, traditions, skills or knowledge; (ii) alternative technologies are being considered, where possible; and (iii) the degree in which the beneficiaries have been able to adapt to and maintain the technology acquired without further assistance?

Internationally accepted methods were used for the design of the project. The proposed cement stabilised gravel road base technology is widespread in Zambia and elsewhere in

Africa. Contractors are familiar with this technology as well as with the proposed bituminous constructions. Hence, the technology used conformed to best practices in major road projects, with experienced contractors and consultants abiding by the most recent quality standards.

The principal technological issue concerns the organisation of road maintenance (e.g. the split between machine-based and labour-based maintenance). In determining this split, it is important to ensure both that road maintenance is cost-effective, and that good technical standards are maintained.

3.5.8 Cross-cutting issues

Q. Wherever relevant, cross-cutting issues such as gender equity, environmental impact and good governance; were these appropriately accounted for and managed from the outset of the project?

The primary documents, which have been elaborated by GRZ in order to create the foundation for future support to the environment, are:

- The National Environment Action Plan (NEAP)
- The National Policy on Environment
- Vision 2030, and
- The Sixth National Development Plan (2011 – 2015 and formerly the FNDP).

There is a tendency in EIAs for more emphasis to be placed on bio-physical than socio-economic aspects, which is probably as a consequence of bio-physical aspects being better described in regulations and guidelines (which traditionally have been generally prepared by engineers), than is the case with socio-economic aspects. The integration of gender and HIV/AIDS considerations has been given more attention, but there is definite scope for improvement through more prescription, reporting and monitoring.

Issues raised in the Final Audit Report of February 2013 included retention of a borrow-pit near Livingstone for a subsequent town roads programme, the modest role played by women in the Contractor's workforce, and the issue of how many Zambians were employed at management level in the same workforce.

In this contract, the Contractor was obliged to prepare an EIA and gain the approval of the Environmental Council of Zambia, which was done. No compensation was paid for the use of borrow pits as the land was generally under customary title. Instead the Contractor carried out minor improvements to roads for the benefit of the local communities. Community members interviewed stated that the Contractor did not carry out improvements as promised; however this is difficult to verify. The RDA Procedures Manual for Environmental and Social Management in the Roads Sector in Zambia, December 2006, contains some guidance in relation to resettlement, and reference should be made to the RDA Resettlement Policy Framework from 2003 for further details. As this was an existing road with a reasonably well defined wayleave, there was no need for resettlement.

The 2003 ROADSIP II document lists the following key issues and recommendations in order to effectively address gender as a cross-cutting issue:

- Inclusion of women in decision making processes, with sufficient representation of women at both programme co-ordination and decentralised level
- Greater informal employment of women in road maintenance and construction; the target is that "for every three people employed, at least one should be a woman, and this condition must apply for all positions from general labour to supervisory positions"

- Capacity building and training, including enhancement of technical and other broader skills for both women and men as well as gender sensitisation for male counterparts
- Higher income generation opportunities for women
- Development of a strategy to mainstream gender into ROADSIP II activities
- Monitoring of gender mainstreaming, with suggested indicators on number of women in the programme and their positions, number of women attending training, number of women awarded contracts, and number of women contractors.

These issues were largely not addressed throughout the Zimba to Livingstone Project; however, there is an opportunity in future projects to utilise the opportunities for interaction with communities and implement some form of gender management plan.

3.6 Mutual Reinforcement (Coherence)

3.6.1 Complementarities of EC policies with country's policies and others

TOR Extract
The extent to which activities undertaken allow the European Commission to achieve its development policy objectives without internal contradiction or without contradiction with other Community policies. Extent to which they complement partner country's policies and other donors' interventions.

Q. Considering other related activities undertaken by Government or other donors, at the same level or at a higher level:
- **Likeliness that results and impacts will mutually reinforce one another**
- **Likeliness that results and impacts will duplicate or conflict with one another?**

The rehabilitation of the Zimba to Livingstone road was an expressed priority for both EU and GRZ and is complementary to other activities within the sector. It complements the previous rehabilitation of the Monze to Zimba road and the Kabwe to Kapiri road (T2) also funded by EU under the 8th EDF, the support to the institutions through the 8th EDF, and the sector budget support during the 9th EDF. The EU also provided support to the upgrading of the Airport and the Museum and water and sanitation in Livingstone.

At the time of programming it was queried whether the feeder roads adjoining Zimba to Livingstone should be considered. Secondary roads were considered under the periodic maintenance programme (9th EDF) implemented through sector budget support. According to the reform process the District Councils were to be appointed as Road Authorities in order to administer feeder road projects in their districts and a special component (□20 million) of the 9th EDF sector budget support was earmarked for feeder roads rehabilitation.

Under the 9th EDF a programme of periodic maintenance of trunk, main and district roads was being implemented, and a programme of maintenance and rehabilitation of feeder roads had also commenced, but was unfortunately curtailed when the funds were suspended.

There is a donor coordination forum in the road sector, and the EU held the chair as the lead donor during the implementation of the Zimba to Livingstone road. This also included World Bank, DANIDA, NORAD and JICA, and used to meet bi-annually with the Committee of the Permanent Secretaries of the Road Maintenance Initiative and the other stakeholders. Since 2000 the forum was able to actively support GRZ in the preparation of the Transport Policy and the resulting legislation that created the three new Road Agencies and in the subsequent preparation of the ROADSIP documents.

Following the AG Audit and others, the CPs requested that the Government and RDA implement a series of short and long-term measures to improve the governance of the roads sector. Short-term measures were made (including the replacement of key personnel); however, GRZ has not responded to the request for long-term measures. A key issue is the placement of RDA under the Office of the President, which effectively means that it cannot be audited in the manner requested by the CPs. Other requested interventions included the updating of the transport policy, the setting aside of adequate funds for maintenance and implementing studies on institutional change, and regular progress reporting. The implication is that 9th EDF funds will be de-committed by the end of 2013 (expiry of 9th EDF FA). Two tranches of funding for budget sector support are available in the 10th EDF; however these are unlikely to be disbursed due to the lack of response regarding the long-term reforms requested.

Q. Connection to higher-level policies (coherence)
Extent to which the project/programme (its objectives, targeted beneficiaries, timing, etc .):

- **Is likely to contribute to / contradict other EC policies**
- **Is in line with evolving strategies of the EC and its partners?**

Zambia was the first ACP country where Sector Budget Support (SBS) was introduced as the new financing modality for the road sector. It was an experiment for both GRZ and EU. At that time (2005), the concept of Sector Budget Support under the condition of a parallel Sector Policy Support Programme was not yet fully developed by the European Commission.

Sector Budget Support was concerned with four objectives for which indicators were set:

- Implementation of institutional reform
- Increased road sector financing
- Bringing the core road network, as defined in the national ROADSIP II (2004-2013), to a maintainable condition; and
- Regular financial control.

GRZ's first priority over the 9th EDF period was, as far as can be seen, to improve high traffic volume (paved) roads. Accordingly, up to 85% of paved roads were rated as being in good to fair condition by 2009, but less than 15% of the unpaved roads achieved a similar rating.

The choice for SBS as the dominant financing modality responded well to the Paris Declaration on Aid Effectiveness (2005) and EU policies on Effectiveness of Aid, while the incorporation of the road sector as a whole and the consorted donor approach (led by the EU) responded adequately to the DAC Guidelines on Sector-wide Approach and the European Consensus on Development (2006).

The second focal sector of the EU 9th EDF was Institutional Development and Capacity Building, targeted primarily at the Ministry of Finance and National Planning (MFNP) with a view to strengthening the three core functions of planning and economic management, expenditure control and accounting, and statistical services.

The second focal sector of the 10th EDF support was also Capacity Building, which followed on from the lessons of previous interventions and included support to the Public Expenditure Management and Financial Accountability (PEMFA) programme.

Despite good CP coherence in the support to the road sector, key CPs such as DANIDA and KfW are exiting from the road sector. Meanwhile the new entrants to the sector include China (represented by the EXIM Bank and the Development Bank of China) and the Development

Bank of Southern Africa (DBSA), which currently dominate the additional finance to GRZ. It is uncertain whether this will be a long-term relationship. Thus far the Development Bank of South Africa (DBSA) has expressed its willingness at least to exchange information.

The project has contributed to the EC policies of co-operation as elucidated in the 9th EDF CSP. Coherence between donors is assured due to discussions held on the JASZ.

It is clear however that the EU will no longer consider roads and transport as a focal sector of support, and the shift is now towards the energy sector.

3.7 EC value added

Q. Extent to which the project/programme (its objectives, targeted beneficiaries, timing etc.) is complementary to the intervention of EU Member States in the region/country/area

Donors ensure cooperation through providing support to ROADSIP, which is the GRZ overarching framework for investment in the road sector.

The EU interventions were certainly co-ordinated with interventions of the few EU Member States active in the Zambian road sector (through DANIDA and KfW), and indeed mutually complementary. Member States are sometimes more efficient (and then also more effective), being less handicapped by oversight from Brussels, in response to immediate needs. Unfortunately, many of the mentioned Member States have indicated their intention to terminate their support to the Zambian road sector by the end of 2013 (ROADSIP II).

The reclassification of Zambia as a lower middle-income country has propelled an improved economic environment. In addition, Zambia's increased FDI, with favourable copper earnings and Chinese economic influence, has significantly reduced the economic and political importance of Budget Support (BS). Therefore, despite the fact that the EU remained the major contributor of BS, the financial leverage of General BS diminished, with Zambia becoming less aid-dependent.

The Ministry as well as RDA disputed many of the findings of the AG audit, and questioned the quality of the TA provided by the EU, the unplanned requirement for outcomes indicators, sovereignty aspects, and other issues. RDA already benefits from support that resumed or started soon after the 2009 crisis, variously from the World Bank (training), Development Bank of South Africa, AfDB, EIB, KFW, China, and others.

Q. Extent to which the project/programme (its objectives, targeted beneficiaries, timing etc.) is co-ordinated with the intervention of EU Member States in the region/country/area?

Donor coordination occurs on a regular basis; however, the EU no longer participates in such fora due to its move away from the road sector in the 11th EDF.

The 2009 Office of the AG's audit revealed major over-commitment, weak design and supervision, poor contract management, and systematic over-engineering of the Core Road Network (CRN) rehabilitation by the EU-supported Road Development Agency. The EU duly suspended the final SPSP1 disbursements and the launch of SPSP2, pending corrective measures by GRZ. The audit itself identified major PFM shortcomings, such as considerable

over-commitments by the Ministry of Works and Supply/ Road Development Agency (MWS/RDA) that presented a major risk (with respect to value-for-money, sustainability) to the EU financial contribution to CRN rehabilitation and maintenance. Other more technical weaknesses at design, contract management and supervision stages within RDA were confirmed by the OAG's audit. By the end of 2010 short-term corrective measures were agreed and implemented by the RDA. By end of 2011 the EU was still unable to disburse the last SPSP1 variable tranches or engage SPSP2, as requested long-term corrective measures were still pending. Alternative funding opportunities free from policy dialogue requirements were made possible by steady increases in tax revenues and support.

According to the EU Country Level Evaluation, September 2012, ECO Consult, the EU Budget Support managed to increase the size and share of aid in the budgetary processes, and served as a catalyst in various improvements to the government's planning, accounting and reporting procedures. In providing resources through the budget to enhance GRZ's ability to implement its strategy effectively, the EU pioneered a major shift away from project-type support.

Zambia has relatively inclusive dialogue structures that have offered government and the EU a potential platform for handling sensitive and controversial political and economic issues. The EU contributed to major institutional reforms and to operationalising the Road Development Agency (RDA), the National Road Fund Agency (NRFA) and, to a lesser extent, the Road Traffic Safety Agency (RTSA), by providing financial inputs through one of the very first EU Sector Policy Support Programmes (SPSP) in Africa, accompanied by significant TA support.

Aside from this relative decrease, alternative external sources of funding are multiplying, with incomparably lower transaction costs. Zambia has generally lost its appetite for EU financial support, mainly on account of its comparative disadvantages, notably lengthy procedures, one-sided decision-making, heavy reporting, and packaging of politically sensitive issues, along with high transaction costs.

The recommendation of the Country Level Evaluation was to engage in the adjustment of EU strategy in response to the steady decrease in the leverage capacity of EU financial input and to engage in an exit strategy from the road sector by first maximising the Road SPSP II focus on rural transport.

Q. Extent to which the project/programme (its objectives, targeted beneficiaries, timing etc.) is creating actual synergy (or duplication) with the intervention of EU Member States

The approval of the FA involved the input of the Quality Support Group in Brussels. Although some aspects of the original Proposal were queried, the project ultimately scored highly and was approved for funding.

Cooperating Partners (CPs) generally work well with the Zambian Government (GRZ), with a good donor division of labour under a Joint Assistance Strategy. As the economy has grown, dependence on traditional donors' development aid – Official Development Aid (ODA) – has fallen to 18% of the government's budget. Non-ODA sources of development finance are becoming increasingly important, especially from China.

Q. Extent to which the project/programme (its objectives, targeted beneficiaries, timing etc.) involves concerted efforts by EU Member States and the EC to optimise synergies and avoid duplication?

The EU used to be a lead donor in the road sector, but in recent years the level of contribution to the annual budget has been quite minimal and did not warrant such a position. The Chinese Government are currently providing loans to GRZ for road development, and the Chinese traditionally did not participate in the donor fora.

The EU took the lead in the sector until the end of 2012 and currently the main 'troika' consists of the EU, WB and ADB, with the ADB currently leading the sector. JICA is also a participant in these discussions.

The EU Delegation has been involved in the preparation process for the ESA RSP-RIP (EDF10). The NIPs of the ESA-IO region (including Zambia) have substantial linkages with the RIP. This particularly pertains to the large regional infrastructure projects, private sector development, food security, rural development and agricultural development, along with specific activities for supporting implementation of the regional and bilateral trade agenda, including FTAs, customs unions, monetary unions, EPAs, and so forth.

4 VISIBILITY

TOR EXTRACT
The consultants will make an assessment of the project's strategy and activities in the field of visibility, information and communication, the results obtained and the impact achieved with these actions in both the beneficiary country and the European Union countries.

We are aware that visibility was applied in the production of all documents, project signboards and vehicles provided under the project. Initially the project signboards erected did not properly show the EU as co-financier and new signs were erected. It would have been preferable if these had been properly itemised and designed in the contract documents. Many advertising hoardings were removed through the contract at the approach to Livingstone. These were unsightly and constituted a danger to visibility in some cases. If these are to be re-erected they should follow strict guidelines.

Project signboard at start of 42.8 kilometre section

5 OVERALL ASSESSMENT

The construction of the road was a high priority for both EU and GRZ as it comprised a small but very important link in the main North-South network linking Dar es Salaam through Zambia to the borders of Victoria Falls, Kazungula and Katima Mulilo. It was unfortunate that the preparation stage took a long time, particularly due to an initial failed tender, which delayed the procurement process. This also highlighted the shortage of funds, which can be ascribed to the high level of deterioration of the road before construction, the lack of competition at the time, the increase in the costs of inputs for road construction and the lack of sufficient provision within the FA. One of the positive aspects of this project has been the fact that GRZ raised the necessary funds through its own resources to enable the project to be completed, albeit by means of two separate contracts.

Another positive aspect is the quality of the road, which is currently considered the 'best in Zambia' and which has followed the construction of the Monze to Zimba link in the early 2000s, which is also considered to be of high quality. Whether this can be maintained will depend on the level of funds assigned to timely routine and periodic maintenance. Some of the signs are promising in this respect. There are a number of design features that should be replicated in roads throughout Zambia where feasible (such as the use of reflective road studs), and there are a number of additions which we have suggested, particularly in relation to issues relating to social welfare and road safety. These have been documented for future reference. We also believe the project is a good example of being well managed at all levels.

There has been a tangible development in the City of Livingstone in the last 3 years. Although the construction of the road link cannot be wholly responsible, we believe it to be partially responsible. These include the construction (mainly ongoing) of a new airport terminal, inter-city bus terminal and market, and a large investment in the City and township roads. The numbers of local tourists travelling to Livingstone has reportedly increased, travel times have reduced, traffic and trade revenues have increased substantially, the Chamber of Commerce has been revived, and Livingstone is now well supplied with fresh produce being produced in Zimba and Kalomo Districts and elsewhere. There has been a substantial increase in traffic and despite the increased costs, the economic viability of the road has been confirmed. These developments would not have taken place to the same extent without the road.

The road was constructed during a time of institutional changes for GRZ, and of policy change by the EU. The Road Sector Institutions have experienced many changes of personnel; donor relations have been strained at times; the EU will be changing its focus from the transport sector; some other donors are also moving out of the sector, and others have moved in. New plans will need to be developed to suit the new circumstances.

Irrespective of these developments, it is of fundamental importance that the Road Sector is properly managed, that regular condition surveys and traffic counts are carried out, and that programming for annual workplans and budgets is carried out. It is also fundamentally important that adequate funds are set aside for road maintenance, and that the roads are protected from overloading. Hopefully the situation can settle and improve after recent upheavals.

Recent institutional developments are positive but not without challenges.

6 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusions

The conclusions drawn divide themselves into three categories of Design, Implementation and Sustainability as illustrated in the following table:

Design	
1	The community awareness campaigns are a useful means of interacting with the local communities, and these activities could be expanded for future reference to include aspects of road safety and vandalism.
2	Engineer's Cost Estimates have often proved to be too low when the time comes to implement the projects, and this was very much the case for the Zimba-Livingstone road.
3	The carriageway width (at 6.5m) is limited in comparison to other stretches of the North-South Corridor.
4	Where possible, additional works should be identified at an early stage to avoid costly extensions of time of contracts.
5	The numbers of road accidents due to overspeeding have increased.
6	There is little facility for off-road parking at the Police Checkpoint.
7	Filter roads at weighstations also need to be able to accommodate vehicles in the event of a breakdown. Other design details should be replicated elsewhere.
8	It was noted that the visibility requirements were subject to an Administrative Order for additional works.
9	An Administrative Order was also required for the cost of the official opening ceremony
10	There is a need for greater clarity of the application of the Duty and Vat exemption.
11	A wealth of information exists on the impact of road development; however, it is necessary to analyse how best this can be translated into positive actions.
Implementation	
1	The Logframe was not used as a management tool to guide the implementation of the project.
2	No baseline study was carried out for the parameters identified in the LFM.
3	A road safety audit would be of benefit both at design stage and after construction.
4	It was observed that tenders for works were not as competitive as hoped for.
5	According to community members the Contractor did not keep his side of the agreement in terms of payment to the communities for the use of borrowpits and abstraction of water.
Sustainability	
1	It was noted that the Monze to Zimba section did not yet have a re-seal despite the road being handed over more than 10 years ago
2	It is time now to plan for the first routine maintenance contracts on the Zimba to Livingstone road
3	The axle load programme has shown noticeable results in terms of the operations of the new weighstation in Livingstone. Challenges remain, however.
4	According to reports there is a need for greater emphasis on the support to higher learning institutions such as Universities and to training institutions such as NCC and the Trades Training Schools.
5	Although they were not an integral part of the Zimba to Livingstone road, the RDA and Local Authority experienced great difficulty with the Livingstone City roads funded by JICA. In practice the RDA was not wholly concerned, as the LCC is a duly appointed Road Authority.

6.2 Recommendations

Recommendations have been derived from the conclusions in 6.1 and have been grouped under Lessons Learnt and Future Considerations as outlined in the following table:

Lessons Learnt	
1	The budget line set aside for HIV/AIDS awareness campaigns should include sensitization of gender equality and danger of vandalism on road furniture. Community consultations should be expanded to include road safety awareness, including the dangers of theft of road signs.
2	The Road Development Agency (RDA) should make it mandatory to place road studs on all Trunk Roads in order to improve road safety. This was piloted successfully on the Zimba to Livingstone road.
3	Provide parking at Police Checkpoint in case a vehicle is impounded. The total length of Police Checkpoint should be established on a case-by-case basis but it should consider, among other factors, traffic volume and type and class of road.
4	Ensure that Filter Roads at Weighbridges accommodate vehicles even in case of breakdown. Other design aspects should be replicated elsewhere.
5	The additional works for urban areas were included as variations to the works contract; however, it would have been better if these were foreseen and included in the contract documents at an early stage.
6	Allow a separate budget line for visibility actions and official opening costs. The main requirements of the EC visibility guideline for a road project should be clearly outlined and itemised in the Bill of Quantities.
7	Problems have been experienced due to low engineer's estimates, which have had a resultant effect on the scope of the works to be implemented. Cost estimates should be index-linked to project the likely costs to the time of construction, and it should be reviewed at the time of design review by the Supervision Consultants.
8	The authorities have an obligation to ensure that tenders are as competitive as possible, and it is worth giving this aspect extra attention. Contractors should be given adequate time to prepare a bid, and a pre-bid workshop should be held to highlight the common pitfalls in bid preparation. Tender invitations and documentation should clearly state whether attendance at the pre-bid meeting is mandatory.
9	Some communities complained that promises made by the Contractor for the use of borrowpits and the abstraction of water were not adhered to. This is difficult to adhere to, but future projects of this nature should specify in more detail the environmental obligations of the Contractor, and a detailed EMP should be included in the project specifications and contract documents.
10	The experience from this Contract has been that there is a need for greater clarity on the mode of application for Duty and VAT exemption.
Future Considerations	
1	The Road Development Agency (RDA) should set aside future maintenance funds for the improved road section in order to safeguard the huge investment spent on the road. With the predicted heavy truck flows, specific provision should be made for planned preventative interventions in the form of scheduled reseals and overlays. The RDA should also make timely interventions in case the constructed road is damaged or an accident occurs.
2	Road Safety deserves greater attention for future projects. This should include IEC campaigns with local communities and schools, and a road safety audit should also be carried out both at design stage and following completion of the road project. It is never too late to implement a detailed road safety audit and to implement the recommendations. This should be considered by RDA and RTSA.
3	In future a more concerted effort should be made to use the Logframe as a management tool, as it is a very important guiding document for financing agreements. The LFM should be reported on regularly in the project reporting and specific baseline data should be collected which can be used as a basis for future evaluation.
4	The RDA should strive to adopt a carriageway width of up to 7.3 m for links in both the North-South and East-West Corridors, as this will improve safety greatly. The project road is narrow, compared with many other sections of the North-South Corridor.
5	There should be a concerted effort to analyse the results of road baseline and

	monitoring studies, and come up with practical ways and means to enhance the positive and mitigate the negative impacts through the provisions of the works contracts.
6	The RDA should continue the good work in implementing the axle load control programme, and new methods of overcoming the challenges should be developed.
7	Future TA programmes to the Road sector should aim at improving the capacities in the universities and for artisanal training at the NCC.
8	There has been an overemphasis of funding of new and paved roads at the expense of unpaved feeder roads which can be more economically viable.
9	Although currently in good condition, a reseal of the Monze to Zimba road is already warranted as a means of preventive maintenance, and was envisaged in the economic feasibility study. The pavement design for the Zimba-Livingstone road recommended that the road should receive a single seal after 7 years (i.e. 2018) and an overlay after 14 years (i.e. 2025), and it is important that these interventions should be planned in advance.
10	There has been much emphasis on the construction and upgrading of the TMD network. A more balanced approach would favour investment in feeder roads and maintenance by means of OPRC contracts, as this could represent a more cost-effective means of reducing poverty.
11	The centralised RDA has been seen as contradictory to the Decentralisation Policy. However, if the Local Authorities can be appointed effectively as Road Authorities in their own right, this can be overcome, although there are huge challenges of capacity building in the Districts.
12	More oversight is required by RDA in the implementation of urban road projects by the Local Authorities; alternatively the Local Authorities must have proven capacity in order to supervise the works effectively.

7 ANNEXES TO THE REPORT

Annex I. Terms of Reference of the project

SPECIFIC TERMS OF REFERENCE
REHABILITATION OF THE ZIMBA-LIVINGSTONE ROAD - FED/2007/019-642
FINAL EVALUATION OF THE REHABILITATION OF TRUNK ROAD T1 FROM ZIMBA TO LIVINGSTONE (Kms 30.00 to Kms. 72.80)
FWC BENEFICIARIES 2009: EuropeAid/127054/C/SER/multi
LOT 2: Transport and Infrastructures

1. Background

The National Indicative Programme (NIP) identifies investment in the transport sector as one of the key areas for economic development and poverty alleviation in Zambia. The European Union (EU) reflected their willingness to support interventions in the road sector by allocating indicative resources of 90 Million Euro under the 9th European Development Fund (EDF). Also, the Country Support Strategy (CSS) for both the 8th and 9th EDF, recognise the road sector as crucial for the development of all other key economic areas and instrumental in attaining the two major EC aid objectives in Zambia, namely;

- Fostering a sustainable economic growth and social development, with particular emphasis on the development of human resources and gender equality and
- Alleviating poverty in accordance to the Zambia's Poverty Reduction Strategy Programme - (PRSP).

The rehabilitation of 42.80Kms of the Trunk Road T1 from Zimba and Livingstone, situated in the Southern Province of Zambia is consistent with the NIP and CSS agenda for providing quality roads that will enhance the economic development of Zambia. Thus, the EU under the 9th EDF specifically allocated 15 million Euro to support the co-financing of this project with Government of the Republic of Zambia (GRZ).

1.1 Project description

The central and land-locked position of Zambia poses a great challenge for improved and sustainable road network within the country and linking to the rest of the neighbouring region. Various inter-regional routes connect with the Zambian core trunk road network at different locations. The trunk road T1 from T2 junction (after Kafue weigh-bridge) to Livingstone is a strategic and vital link between Zambia's capital Lusaka and the tourist capital Livingstone and also forms an integral part of the North-South corridor which is vital for national and regional transport communication, trade and economic development of the East, Central and Southern African region.

The rehabilitation of 42.80Kms of trunk road T1 from Zimba to Livingstone completes the remaining section of trunk road T1 which was earlier rehabilitated by the European Union from Monze to Zimba under the 8th European Development Fund (EDF), at a cost of approximately ZMK 54.44 Billion and completed in September 2002. Also, GRZ using its own resources rehabilitated 30Kms of the trunk road T1 starting from Zimba towards Livingstone.

1.2 Overall objective

The overall objective of the project was the promotion of equitable economic growth, regional integration, and poverty reduction in Zambia. The purpose is to contribute to the establishment of a safe and sustainable national road network achieved by the end of ROADSIP II.

1.3 Project purpose

The project purpose was to extend the technical life of the remaining 42.80 km stretch of the Trunk road T1 starting in Livingstone by another 15 to 20 years.

1.4 Results

The project will result in lower Vehicle Operation Costs (VOC), transport and travel times and provide a safer travelling environment for a growing number of vehicles using the project road. Furthermore, it will bring the project road to a standard required for rational maintenance as defined in the Road Sector Investment Programme (ROADSIP).

1.5 Indicators

The indicator to assess the achievement of the project overall objective will be the increase in passenger and goods traffic with the expected increase in the volume of imports and exports with neighbouring countries and tourism to Livingstone.

To measure the achievement of its purpose, we intend to use traffic flows counts, road condition surveys, road safety statistics and import/export statistics through the southern corridor.

1.6 Scope of activities

The scope of the project under evaluation covered a total of 42.80Kms of the Trunk Road T1 from Zimba to Livingstone (Kms 30.00 to Kms 72.80) in the Southern Province of Zambia.

- Start point Km 30.00 from Zimba
- End-point 72.80kms from Zimba (Livingstone town)

The main scope of works comprised:

- Reconstruction of the existing base as a stabilised sub base layer (and a lower sub-base layer for 3Km) and construction of a crushed stone base and asphalt wearing course.
- Upgrading of the road profile by constructing shoulder with a double surface dressing.
- Upgrading of the existing drainage system
- Upgrading of the road furniture
- Street lighting installation
- Additional works to the weigh-bridge, police check-point and concrete foot-paths & drains.

1.7 Project activities

This road section was co-financed from resources of the 9th EDF and GRZ. Following the conclusion of the design review process, one single open international tender was launched in November 2008. The tender procurement process was concluded in two separate works contracts, namely:

- Contract A: financed from resources of the 9th EDF, amounting to approximately 11.57 M€
- Contract B: financed from resources of the GRZ, amounting to approximately 23.95 M€.

The above civil works contracts were awarded to M/s China Geo Engineering Corporation (CGC) in May 2009 for a total amount of 35.50 M€. The initial performance period for the civil works for the entire road section was 18 months, commencing on 11th April 2009.

The international restricted service tender for the supervision of the civil works was awarded to M/s Nicholas O'Dwyer & Company Limited (NOD), an international firm in association with Zulu Burrow Limited, a local firm subject to a successful performance of the complimentary services for the design review of the rehabilitation of trunk road T1 from Zimba to Livingstone (Kms 30.00 to Kms 72.80).

Initially, the EU Delegation to Zambia awarded M/s NOD a service contract to review the design for the rehabilitation of the trunk road T1 from Zimba to Livingstone (Kms 30.00 to Kms 72.80) which was done by M/s Africon and was the basis for the works tender procurement. Due to the heavy rains experienced in the region in 2008, the earlier design was obsolete, thus the need to review and update the design and make it conform to the existing situation on the ground. The initial overall performance period for the services contract was 18 months plus 12 months for maintenance and 1 month for final acceptance.

A Framework Contract (FWC) for the Technical Audit of the Rehabilitation of Trunk Road T1 from Zimba to Livingstone (Kms 30.00 to Kms 72.80) was awarded to M/s OVE Arup & Partners International, the assignment commencement date being 6th August 2010.

Another FWC for the Financial Audit and Procurement Review of the services and works contracts was awarded to M/s Moores Stephens, the assignment commencement date being 10th June 2010.

The implementation of the project was overall satisfactory, the initial works implementation period was extended from 18 months to 24.60 months due to delays in performance as a result of bad weather (rainfall) and additional works to the weight-bridge area, concrete side drains & foot-paths, police check-point and street light installation. First provisional acceptance for the road section was given to CGC on 28/11/2010 and the second provisional acceptance covering sections of the additional works was given on 27/05/2011. The final acceptance for the entire project was given on 29/06/2012. Subsequently, service contracts for supervision of works and technical audit were extended to cover the entire implementation period of the project.

During the course of implementing the project, regular project meetings with all stakeholders concerned (NAO, EUD & RDA) were held and the Supervisors' Representative conducted regular monthly site inspections and meetings and distributed minutes of meetings accordingly. Monthly Progress Reports were submitted by NOD for the entire duration of the project.

2. Description of the assignment

The **Contracting Authority** for this contract is the EU Delegation to the Republic of Zambia and COMESA (EUD) on behalf of the National Authorizing Officer (NAO) of the European Development Fund in the Ministry of Finance.

The **Supervisor** is the Road Development Agency (RDA).

The Contracting Authority and the Supervisor will identify one officer each who will be the day-to-day contact person for that institution. These contact persons will be introduced to the Consultant during the inception meeting.

The Supervisor will arrange introductory letters to facilitate the experts' access to Ministries, public organisations, authorities and agencies etc. whose activities and role are relevant to the assignment.

The Supervisor will also arrange for an inception meeting and ad-hoc progress meeting with the presence of representatives of all relevant core stakeholders.

During the assignment of the expert the NAO and the RDA will make available all documents and information essential to the services to be performed.

2.1 Global objectives

The final evaluation, which has been foreseen in the Technical and Administrative Provisions of the project's Financing Agreement, will provide the decision-makers in the Government of the Republic of Zambia, the relevant external co-operation services of the European Commission and the wider public with sufficient information to:

a. make an overall independent assessment about the past performance of the programme, paying particularly attention to the impact of the project actions against its objectives;
b. identify key lessons and to propose practical and sustainable recommendations for follow-up actions.

2.2 Requested services

The evaluation study responds to the requirements of the last phase of the project cycle. The consultants shall verify, analyse and assess in detail the issues outlined in Annex 2 "Layout, structure of the Final Report". The list of issues is not intended to be exhaustive. The issues refer to the five evaluation criteria endorsed by the OECD-DAC (relevance, effectiveness, efficiency, sustainability and impact), and to the EU-specific evaluation criteria (EU added value and coherence).

The evaluation will ascertain to what extent the results and objectives of the project have been achieved and how safety, social and environmental aspects have been addressed. The audit will address the procurement procedures and the financial aspects and expenditures. The consultants are required to use their professional judgement and experience to review all relevant factors and to bring these to the attention of the Government and European Commission.

For methodological guidance the consultant will refer to the EuropeAid's Evaluation methodology website: http://ec.europa.eu/europeaid/how/evaluation/methodology/index_en.htm and also to the Europeaid Aid Delivery Methods PCM - Project Approach Guidelines available in http://ec.europa.eu/europeaid/infopoint/publications/index_en.htm.

The evaluation approach should be developed and implemented as presented below (for further details consult the evaluation methodology website above mentioned).

2.3 Required outputs

The consultant is expected to provide the following outputs:
- Inception Report
- Desk report
- Draft and Final Evaluation reports

3. Experts profile/ Expertise required

3.1 Number of requested experts per category and number of man-days per expert or per category
The evaluation team will be composed of three (3) senior experts namely: one Civil Engineer, one Transport Economist and one Socio/Environmentalist. The Civil Engineer shall be the team leader of this evaluation team.

3.2 Requested number of man-days per expert:

Expert 1: Civil Engineer: 25 working days split up in 2 working days for international travels to and from Zambia if the expert is a non Zambian resident, 20 working days in Zambia and 3 working days in home office after the mission to Zambia to draft the Final Evaluation report.

Expert 2: Transport Economist: 25 working days split up in 2 working days for international travels to and from Zambia if the expert is a non Zambian resident, 20 working days in Zambia and 3 working days in home office after the mission to Zambia to draft the Final Evaluation report.

Expert 3: Socio-Environmental expert: 20 working days split up in 2 working days for international travels to and from Zambia if the expert is a non Zambian resident, 15 working days in Zambia and 3 working days in home office after the mission to Zambia to draft the Final Evaluation report.

3.3 Minimum requirements for all experts:

- a solid and diversified experience in the specific field of expertise needed, including experience in evaluation of projects;
- experience in the region;
- full working knowledge of English and excellent report writing;
- at least one of the experts is fully conversant with the principles and working methods of project cycle management and EC aid delivery methods.

3.4 Specific requirement for each expert:

Expert 1 - Civil Engineer:
- Relevant University degree in Civil Engineering or equivalent experience in Civil Engineering. A relevant post-graduate degree for this assignment will be favoured;
- At least 15 years general experience in the field of Civil Engineering and 5 years specific experience in roads/ highways.
- Hands-on experience with implementation and evaluation of road projects in Sub-Saharan Africa;
- Specific experience in Eastern and/or Southern Africa will be favoured.

Expert 2 - Transport Economist:
- Relevant university degree in Transport Economics, or equivalent. A relevant postgraduate degree relevant for this assignment will be favoured;
- Extensive and relevant post-graduate experience of minimum 10 years in the economic and financial analysis of transport projects, preferably in corridor roads and/or associated national road network.
- Over the past ten years, active participation as Transport Economist in the prefeasibility or feasibility of one similar project at least, preferably in Southern and/or Eastern Africa.

- Hands-on experience with implementation and evaluation of road projects in Sub-Saharan Africa;
- Specific experience in Eastern and/or Southern Africa will be favoured.

Expert 3 – Socio/Environmental:

- Relevant University degree or equivalent experience in monitoring and evaluating social/poverty impact of urban and rural social developments programmes. A relevant post-graduate degree relevant for this assignment will be favoured;
- At least 5 years general experience in the field of social related field and 3 years specific experience in social-economic related field.
- Hands-on experience with socio-economic impact assessments, gender integration analysis and environmental impact assessment in Sub-Sahara Africa;
- Specific experience in Eastern and/or Southern Africa will be favoured.

4. Location and duration

4.1 Starting period and duration

It is expected that the assignment shall commence as soon as possible after the signature of the specific contract but not later than 12 August 2013.

It is expected that the three experts commence their assignment in Zambia on the same day.

4.2 Planning

The evaluation process will be carried out through three phases: a Desk Phase, a Field Phase and a Synthesis Phase, as described below:

In the inception stage of the Desk Phase, the relevant programming documents should be reviewed, as well as documents shaping the wider strategy/policy framework. The evaluation team will then analyse the logical framework as set up at the beginning of the project/programme cycle. The relevant programming documents should also be reviewed, as well as documents shaping the wider strategy/policy framework. On the basis of the information collected the evaluation team should:

- Describe the development co-operation context.
- Comment on the logical framework.
- Comment on the issues / evaluation questions suggested (see Annex 2; section 3) or, when relevant, propose an alternative or complementary set of evaluation questions justifying their relevance. Develop the evaluation into sub-questions, identify provisional indicators and their verification means, and describe the analysis strategy.
- Propose a work plan for the finalisation.
- Confirm the final time schedule.

In the finalisation stage of the Desk Phase, the evaluation team should carry out the following tasks:

- Review systematically the relevant available documents (see Annex 2);
- Present an indicative methodology to the overall assessment of the project/programme;
- Interview the programme management, EU Delegation and key stakeholders;
- Present each evaluation question stating the information already gathered and their limitations provide a first partial answer to the question, identify the issues still to be covered and the assumptions still to be tested, and describe a full method to answer the question;
- Identify and present the list of tools to be applied in the Field Phase;
- List all preparatory steps already taken for the Field Phase.

At the end of the desk phase a Desk Phase report shall be prepared (see section 5).

The Field Phase should start upon approval by the evaluation manager of the Desk Phase report or within 2 calendar days after submission of the Desk Phase report, which ever comes first. The evaluation team should:

- Submit its detailed work plan with an indicative list of people to be interviewed, surveys to be undertaken, dates of visit, itinerary, and name of team members in charge. This plan has to be applied in a way that is flexible enough to accommodate any last-minute difficulties in the field. If any significant deviation from the agreed work plan or schedule is perceived as creating a risk for the quality of the evaluation, these should be immediately discussed with the evaluation manager.
- Hold a briefing meeting with the Supervisor and EUD in the first days of the field phase.
- Ensure adequate contact and consultation with, and involvement of, the different stakeholders; working closely with the relevant government authorities and agencies during their entire assignment. Use the most reliable and appropriate sources of information and will harmonise data from different sources to allow ready interpretation.
- Summarise its field works at the end of the field phase, discuss the reliability and coverage of data collection, and present its preliminary findings in a meeting with the Supervisor and EUD.

The Synthesis Phase is mainly devoted to the preparation of the draft Final Evaluation report. The consultants will make sure that:

- Their assessments are objective and balanced, affirmations accurate and verifiable, and recommendations realistic.
- When drafting the report, they will acknowledge clearly where changes in the desired direction are known to be already taking place, in order to avoid misleading readers and causing unnecessary irritation or offence.

4.3 Locations of assignment

The assignment will be carried out at the consultant's home office and Zimba-Livingstone project area in Zambia.

5. Reporting

5.1 Content

The reports must match quality standards. The text of the report should be illustrated, as appropriate, with maps, graphs and tables; a map of the project's area(s) of intervention is required (to be attached as Annex).

The consultant will submit the following reports in English:

1. **Inception report** of maximum 10 pages. In the report the consultant shall describe the first finding of the study, the foreseen degree of difficulties in collecting data, other encountered and/or foreseen difficulties in addition to his programme of work and staff mobilization.

2. **Desk Phase report** of maximum 20 pages of main text, excluding annexes, to address the issues mentioned in Annex 2; section 3.

3. **Draft Final Evaluation report** of maximum 50 pages of main text, excluding annexes, using the structure set out in Annex 2. Besides answering the evaluation questions, the draft Final Evaluation report should also synthesise all findings and conclusions into an overall assessment of the project/programme.

4. **Final Evaluation report** with the same specifications as mentioned under 3 above, incorporating any comments received during the presentation of the draft Final Evaluation report at the seminar and from the concerned parties on the draft Final Evaluation report.

The quality of the final Evaluation report will be assessed by the Supervisor and EUD using a quality assessment grid (see annexe IV). The explanation on how to fill this grid is available on the following link:
http://ec.europa.eu/europeaid/evaluation/methodology/egeval/guidelines/gba_en.htm

The consultant will include as an Annex the DAC Format for Evaluation Report Summaries (see Annex 5). The report is to be disseminated under the full responsibility of the Commission.

5.2 Language

The language of the reporting is English.

5.3 Submission/comments timing

Inception report should be submitted 3 working days from the start of the assignment.

Desk Phase report to be submitted at the end of the desk phase.

Draft Final Evaluation report to be submitted 5 working days before the de-briefing meeting where it will be officially presented to all stakeholders. After submission of the draft Final Evaluation report, the stakeholders will have 15 working days for providing their comments to the Contracting Authority. The Contracting Authority will then have 5 working days to send the consolidated comments to the Consultant.

Final Evaluation report shall be submitted five (5) working days after the deadline for receiving consolidated comments from the Contracting Authority and should give account on how comments have been reflected in the report. The Contracting Authority will inform the contractor whether the Final Evaluation report has been accepted within twenty-one (21) calendar days from its receipt.

5.4 Number of reports copies:

All reports should be submitted in ten (10) paper copies and one (1) electronic copy to the Contracting Authority, which will distribute them to all main stakeholders. The paper copies should be printed on both sides of the pages (except for specific technical annexes where necessary).

6. ADMINISTRATIVE INFORMATION

6.1 Interviews if necessary indicating for which experts/positions:

Phone interviews of the proposed experts could be held by the Evaluation Committee before finalising the evaluation of offers received.

6.2 Evaluation of offers:
The following criteria shall be used for the evaluation of offers submitted under this specific request for services;

An evaluation committee/team comprising three evaluators shall individually score/ allocate points and the average (possible weighted) will be taken into consideration. Points out of 100 will be given by the committee based on the weighting criteria for all experts as described in Annex VI attached to these Terms of Reference.

There are no elimination thresholds as any offer that has met the administrative criteria of minimum required expertise is deemed technically acceptable. A weighting of 80/20 will be considered for the technical and financial criterion when evaluating the offers. An offer with the highest average technical score will be given a weighting of 80 points while the lowest financial offer (fees, excluding reimbursable) will be given a weighting of 20 points. The successful offer will be the one with the highest combined technical and financial score out of the 80/20 weighting.

6.3 Language of the specific contract:

The language of the specific contract is English.

6.4 Items to foresee under "Reimbursable expense"

- Per diems in Zambia;
- International travels to/from Zambia;
- Local travels;

6.5 Others:

The Supervisor will arrange introductory letters to facilitate the experts' access to ministries, public organisations, authorities and agencies etc. whose activities and role are relevant to the assignment.

Annex 1: Key documents for the evaluation
Indicative list to be adapted/ expanded where appropriate:

- Legal texts and political commitments pertaining to the project / programme
- Country Strategy Paper [country/region] and Indicative Programmes (and equivalent) for the periods covered
- Governmental national and sector policy documents
- Project identification study
- Project feasibility study
- Project financing agreement and addenda
- Project's Global and Annual Operational Plans
- Project's quarterly and annual progress reports, and technical reports
- EC's Result Oriented Monitoring Reports, and eventual other external and internal monitoring reports of the project
- Project's mid-term evaluation report and eventual other relevant evaluations audit reports. The evaluation team should not repeat the points already covered by such documents but use them and go beyond them.
- [add other sources of information, e.g. base-line surveys, specific studies or analyses of specific issues/groups, relevant country, sector, thematic and project evaluations, whenever available, works/supplies/services contracts, etc.].
- Relevant documentation from national/local partners and other donors
- Relevant policy and planning documents from national/local partners and other donors.

Note: The evaluation team has to identify and obtain any other document worth analysing, through its interviews with people who are or have been involved in the design, management and supervision of the programme.

Annex II: Layout, structure of the Final Report

The final report should not be longer than approximately 50 pages. Additional information on overall context, programme or aspects of methodology and analysis should be confined to annexes.

The cover page of the report shall carry the following text:

'' This evaluation is supported and guided by the European Commission and presented by [name of consulting firm]. The report does not necessarily reflect the views and opinions of the European Commission''.

The main sections of the evaluation report are as follows:

1. Executive Summary
A tightly-drafted, to-the-point and free-standing Executive Summary is an essential component. It should be short, no more than five pages. It should focus mainly on the key purpose or issues of the evaluation, outline the main analytical points, and clearly indicate the main conclusions, lessons learned and specific recommendations. Cross-references should be made to the corresponding page or paragraph numbers in the main text that follows.

2. Introduction
A description of the project/programme and the evaluation, providing the reader with sufficient methodological explanations to gauge the credibility of the conclusions and to acknowledge limitations or weaknesses, where relevant.

3. Answered questions/ Findings
A chapter presenting the evaluation questions and conclusive answers, together with evidence and reasoning.

The organization of the report should be made around the responses to the Evaluation questions which are systematically covering the DAC evaluation criteria: relevance, effectiveness, efficiency, impact and sustainability, plus coherence and added value specific to the Commission. In such an approach, the criteria will be translated into specific questions. These questions are intended to give a more precise and accessible form to the evaluation criteria and to articulate the key issues of concern to stakeholders, thus optimising the focus and utility of the evaluation.

This annex proposes an indicative list of issues which deserve to be studied in a project/programme evaluation. The evaluation should focus on a limited number of precise issues/questions. It should ensure that there is a balance of evaluation criteria.

Further guidance on evaluation questions for the following sectores - health, education, transports, rural development, water and sanitation - is available on the following link
http://www.cc.cec/dgintranet/europeaid/activities/evaluation/sec_en.htm

The appropriate evaluation questions and sub questions, based on this set of issues, should be elaborated for each project/ programme evaluation case.

3.1 Problems and needs (Relevance)
The extent to which the objectives of the development intervention (projects/ programme) are consistent with beneficiaries' requirements, country needs, global priorities and partners' and EC's policies.

The analysis of relevance will focus on the following questions in relation to the design of the project:

- the extent to which the project has been consistent with, and supportive of, the policy and programme framework within which the project is placed, in particular the EC's Country Strategy Paper and National Indicative Programme, and the Partner Government's development policy and sector policies
- the quality of the analyses of lessons learnt from past experience, and of sustainability issues;
- the project's coherence with current/on going initiatives;
- the quality of the problem analysis and the project's intervention logic and logical framework matrix, appropriateness of the objectively verifiable indicators of achievement;

- the extent to which stated objectives correctly address the identified problems and social needs, clarity and internal consistency of the stated objectives;
- the extent to which the nature of the problems originally identified have changed
- the extent to which objectives have been updated in order to adapt to changes in the context;
- the degree of flexibility and adaptability to facilitate rapid responses to changes in circumstances;
- the quality of the identification of key stakeholders and target groups (including gender analysis and analysis of vulnerable groups) and of institutional capacity issues;
- the stakeholder participation in the design and in the management/implementation of the project, the level of local ownership, absorption and implementation capacity;
- the quality of the analysis of strategic options, of the justification of the recommended implementation strategy, and of management and coordination arrangements;
- the realism in the choice and quantity of inputs (financial, human and administrative resources)
- the analysis of assumptions and risks;
- the appropriateness of the recommended monitoring and evaluation arrangements;

3.2 Achievement of purpose (Effectiveness)

The effectiveness criterion, concerns how far the project's results were attained, and the project's specific objective(s) achieved, or are expected to be achieved.

The analysis of Effectiveness will therefore focus on such issues as:

- whether the planned benefits have been delivered and received, as perceived by all key stakeholders (including specific vulnerable groups);
- whether intended beneficiaries participated in the intervention
- in institutional reform projects, whether behavioural patterns have changed in the beneficiary organisations or groups at various levels; and how far the changed institutional arrangements and characteristics have produced the planned improvements (e.g. in communications, productivity, ability to generate actions which lead to economic and social development);
- if the assumptions and risk assessments at results level turned out to be inadequate or invalid, or unforeseen external factors intervened, how flexibly management has adapted to ensure that the results would still achieve the purpose; and how well has it been supported in this by key stakeholders including Government, Commission (HQ and locally), etc.;
- whether the balance of responsibilities between the various stakeholders was appropriate, which accompanying measures have been taken by the partner authorities;
- how unintended results have affected the benefits received positively or negatively and could have been foreseen and managed;
- whether any shortcomings were due to a failure to take account of cross-cutting or over-arching issues such as gender, environment and poverty during implementation;

3.3 Sound management and value for money (Efficiency)

The efficiency criterion concerns how well the various activities transformed the available resources into the intended results (sometimes referred to as outputs), in terms of quantity, quality and timeliness. Comparison should be made against what was planned.

The assessment of Efficiency will therefore focus on such issues as:

- the quality of day-to-day management, for example in:
    - operational work planning and implementation (input delivery, activity management and delivery of outputs),and management of the budget (including cost control and whether an inadequate budget was a factor);
    - management of personnel, information, property, etc,
    - whether management of risk has been adequate, i.e. whether flexibility has been demonstrated in response to changes in circumstances;
    - relations/coordination with local authorities, institutions, beneficiaries, other donors;
    - the quality of information management and reporting, and the extent to which key stakeholders have been kept adequately informed of project activities (including beneficiaries/target groups);
    - respect for deadlines.

- Extent to which the costs of the project have been justified by the benefits whether or not expressed in monetary terms in comparison with similar projects or known alternative approaches, taking account of contextual differences and eliminating market distortions.
- Partner country contributions from local institutions and government (e.g. offices, experts, reports, tax exemption, as set out in the LogFrame resource schedule), target beneficiaries and other local parties: have they been provided as planned?
- Commission HQ/Delegation inputs (e.g. procurement, training, contracting, either direct or via consultants/bureaux): have they been provided as planned?;
- Technical assistance: how well did it help to provide appropriate solutions and develop local capacities to define and produce results?
- Quality of monitoring: its existence (or not), accuracy and flexibility, and the use made of it; adequacy of baseline information;
- Did any unplanned outputs arise from the activities so far?

3.4 Achievement of wider effects (Impact)

The term impact denotes the relationship between the project's specific and overall objectives.

At Impact level the final or ex-post evaluation will make an analysis of the following aspects:

- Extent to which the objectives of the project have been achieved as intended in particular the project planned overall objective.
- whether the effects of the project:
- have been facilitated/constrained by external factors
- have produced any unintended or unexpected impacts, and if so how have these affected the overall impact.
- have been facilitated/constrained by project/programme management, by co-ordination arrangements, by the participation of relevant stakeholders
- have contributed to economic and social development
- have contributed to poverty reduction
- have made a difference in terms of cross-cutting issues like gender equality, environment, good governance, conflict prevention etc.
- were spread between economic growth, salaries and wages, foreign exchange, and budget.

3.5 Likely continuation of achieved results (Sustainability)

The sustainability criterion relates to whether the positive outcomes of the project and the flow of benefits are likely to continue after external funding ends or non funding support interventions (such as: policy dialogue, coordination).

The final evaluation will make an assessment of the prospects for the sustainability of benefits on basis of the following issues:

- the ownership of objectives and achievements, e.g. how far all stakeholders were consulted on the objectives from the outset, and whether they agreed with them and continue to remain in agreement;
- policy support and the responsibility of the beneficiary institutions, e.g. how far donor policy and national policy are corresponding, the potential effects of any policy changes; how far the relevant national, sectoral and budgetary policies and priorities are affecting the project positively or adversely; and the level of support from governmental, public, business and civil society organizations.
- institutional capacity, e.g. of the Government (e.g. through policy and budgetary support) and counterpart institutions; the extent to which the project is embedded in local institutional structures; if it involved creating a new institution, how far good relations with existing institutions have been established; whether the institution appears likely to be capable of continuing the flow of benefits after the project ends (is it well-led, with adequate and trained staff, sufficient budget and equipment?); whether counterparts have been properly prepared for taking over, technically, financially and managerially;
- the adequacy of the project budget for its purpose particularly phasing out prospects;
- socio-cultural factors, e.g. whether the project is in tune with local perceptions of needs and of ways of producing and sharing benefits; whether it respects local power- structures, status systems and beliefs, and if it sought to change any of those, how well-accepted are the changes

both by the target group and by others; how well it is based on an analysis of such factors, including target group/ beneficiary participation in design and implementation; and the quality of relations between the external project staff and local communities.

- financial sustainability, e.g. whether the products or services being provided are affordable for the intended beneficiaries and are likely to remained so after funding will end; whether enough funds are available to cover all costs (including recurrent costs), and continued to do so after funding will end; and economic sustainability, i.e. how well do the benefits (returns) compare to those on similar undertakings once market distortions are eliminated.
- technical (technology) issues, e.g. whether (i) the technology, knowledge, process or service introduced or provided fits in with existing needs, culture, traditions, skills or knowledge; (ii) alternative technologies are being considered, where possible; and (iii) the degree in which the beneficiaries have been able to adapt to and maintain the technology acquired without further assistance.
- Wherever relevant, cross-cutting issues such as gender equity, environmental impact and good governance; were appropriately accounted for and managed from the outset of the project.

3.6 Mutual reinforcement (coherence)

The extent to which activities undertaken allow the European Commission to achieve its development policy objectives without internal contradiction or without contradiction with other Community policies. Extent to which they complement partner country's policies and other donors' interventions.

Considering other related activities undertaken by Government or other donors, at the same level or at a higher level:

- likeliness that results and impacts will mutually reinforce one another
- likeliness that results and impacts will duplicate or conflict with one another

Connection to higher level policies (coherence)
Extent to which the project/programme (its objectives, targeted beneficiaries, timing, etc .):

- is likely to contribute to / contradict other EC policies
- is in line with evolving strategies of the EC and its partners

3.7 EC value added

Connection to the interventions of Member States. Extent to which the project/programme (its objectives, targeted beneficiaries, timing, etc .)

- is complementary to the intervention of EU Member States in the region/country/area
- is co-ordinated with the intervention of EU Member States in the region/country/area
- is creating actual synergy (or duplication) with the intervention of EU Member States
- involves concerted efforts by EU Member States and the EC to optimise synergies and avoid duplication.

4. Visibility

The consultants will make an assessment of the project's strategy and activities in the field of visibility, information and communication, the results obtained and the impact achieved with these actions in both the beneficiary country and the European Union countries.

5. Overall assessment

A chapter synthesising all answers to evaluation questions into an overall assessment of the project/programme. The detailed structure of the overall assessment should be refined during the evaluation process. The relevant chapter has to articulate all the findings, conclusions and lessons in a way that reflects their importance and facilitates the reading. The structure should not follow the evaluation questions, the logical framework or the seven evaluation criteria.

6. Conclusions and Recommendations

6.1 Conclusions

This chapter introduces the conclusions relative to each question. The conclusions should be organised in clusters in the chapter in order to provide an overview of the assessed subject.

Note: The chapter should not follow the order of the questions or that of the evaluation criteria (effectiveness, efficiency, coherence, etc.)

It should features references to the findings (responses to the evaluation questions) or to annexes showing how the conclusions derive from data, interpretations, and analysis and judgement criteria.

The report should include a self-assessment of the methodological limits that may restrain the range or use of certain conclusions.

The conclusion chapter features not only the successes observed but also the issues requiring further thought on modifications or a different course of action. The evaluation team presents its conclusions in a balanced way, without systematically favouring the negative or the positive conclusions.

A paragraph or sub-chapter should pick up the 3 or 4 major conclusions organised by order of importance, while avoiding being repetitive. This practice allows better communicating the evaluation messages that are addressed to the Commission. If possible, the evaluation report identifies one or more transferable lessons, which are highlighted in the executive summary and presented in appropriate seminars or meetings so that they can be capitalised on and transferred.

6.2 Recommendations

They are intended to improve or reform the project/ programme in the framework of the cycle under way, or to prepare the design of a new intervention for the next cycle.

Note: The recommendations must be related to the conclusions without replicating them. A recommendation derives directly from one or more conclusions.

The ultimate value of an evaluation depends on the quality and credibility of the recommendations offered. Recommendations should therefore be as realistic, operational and pragmatic as possible; that is, they should take careful account of the circumstances currently prevailing in the context of the project, and of the resources available to implement them both locally and in the Commission.

They could concern policy, organisational and operational aspects for both the national implementing partners and for the Commission; the pre-conditions that might be attached to decisions on the financing of similar projects; and general issues arising from the evaluation in relation to, for example, policies, technologies, instruments, institutional development, and regional, country or sectoral strategies.

Recommendations must be clustered and prioritised, carefully targeted to the appropriate audiences at all levels, especially within the Commission structure (the project/programme task manager and the evaluation manager will often be able to advise here).

7. Annexes to the report

The report should include the following annexes:

- The Terms of Reference of the evaluation
- The names of the evaluators and their companies (CVs should be shown, but summarised and limited to one page per person)
- Detailed evaluation method including: options taken, difficulties encountered and limitations. Detail of tools and analyses.
- Logical Framework matrices (original and improved/updated)
- Map of project area, if relevant
- List of persons/organisations consulted
- Literature and documentation consulted
- Other technical annexes (e.g. statistical analyses, tables of contents and figures)
- page DAC summary, following the format in Annex V.

Annex III - Methodological observations

The evaluation team should refer to the project/programme's logical framework.

It is suggested that the evaluation team carry out *[here refer to the main tools that are envisaged for data collection, if any (the length of this section may range from very short to rather long, depending on whether or not the issues have been a subject of preliminary reflection), for instance:*

- a rapid appraisal through a field visit and a series of interviews
- a questionnaire survey involving a sample of beneficiaries
- a series of focus groups involving beneficiaries and non-beneficiaries
- a series of case studies

The proposal in response to these terms of reference should identify any language and/or cultural gap and explain how it will be bridged.

The project/programme is to be judged more from the angle of the beneficiaries' perceptions of benefits received than from the managers' perspective of outputs delivered or results achieved. Consequently, interviews and surveys should focus on outsiders (beneficiaries and other affected groups beyond beneficiaries) as much as insiders (managers, partners, field level operators). The proposal in response to these terms of reference, as well as further documents delivered by the evaluation team, should clearly state the proportion of insiders and outsiders among interviews and surveys.

A key methodological issue is whether observed or reported change can be partially or entirely attributed to the project / programme, or how far the project/programme has contributed to such change. The evaluation team should identify attribution / contribution problems where relevant and carry out its analyses accordingly.

It must be clear for all evaluation team members that the evaluation is neither an opinion poll nor an opportunity to express one's preconceptions. This means that all conclusions are to be based on facts and evidence through clear chains of reasoning and transparent value judgements. Each value judgement is to be made explicit as regards:

- the aspect of the project/programme being judged (its design, an implementation procedure, a given management practice, etc.)
- the evaluation criterion is used (relevance, effectiveness, efficiency, sustainability, impact, coherence, EC value added)

The evaluation report should not systematically be biased towards positive or negative conclusions. Criticisms are welcome if they are expressed in a constructive way. The evaluation team clearly acknowledges where changes in the desired direction are already taking place, in order to avoid misleading readers and causing unnecessary offence.

Annex IV - Quality assessment grid
**This grid is annexed to the ToRs for information to the consultants*

The quality of the final report will be assessed by the evaluation manager using the following quality assessment grid where the rates have the following meaning:

1 = unacceptable = criteria mostly not fulfilled or totally absent
2 = weak = criteria partially fulfilled
3 = good = criteria mostly fulfilled
4 = very good = criteria entirely fulfilled
5 = excellent = criteria entirely fulfilled in a clear and original way

Concerning the criteria and sub-criteria below, the evaluation report is rated:	**1**	**2**	**3**	**4**	**5**
1. Meeting needs:					
a) Does the report precisely describe what is evaluated, including the intervention logic in the form of a logical framework?					
b) Does the report clearly cover the requested period of time, as well as the target groups and socio-geographical areas linked to the project / programme?					
c) Has the evolution of the project / programme been taken into account in the evaluation process?					
d) Does the evaluation deal with and respond to all ToR requests. If not, are justifications given?					
2. Appropriate design					
a) Does the report explain how the evaluation design takes stock of the rationale of the project / programme, cause-effect relationships, impacts, policy context, stakeholders' interests, etc.?					
b) Is the evaluation method clearly and adequately described in enough detail?					
c) Are there well-defined indicators selected in order to provide evidence about the project / programme and its context?					
d) Does the report point out the limitations, risks and potential biases associated with the evaluation method?					
3. Reliable data					
a) Is the data collection approach explained and is it coherent with the overall evaluation design?					
b) Are the sources of information clearly identified in the report?					
c) Are the data collection tools (samples, focus groups, etc.) applied in accordance with standards?					
d) Have the collected data been cross-checked?					
e) Have data collection limitations and biases been explained and discussed?					
4. Sound analysis					
a) Is the analysis based on the collected data?					
b) Is the analysis clearly focused on the most relevant cause/effect assumptions underlying the intervention logic?					
c) Is the context adequately taken into account in the analysis?					
d) Are inputs from the most important stakeholders used in a balanced way?					
e) Are the limitations of the analysis identified, discussed and presented in the report, as well as the contradictions with available knowledge, if there are any?					
5. Credible findings					
a) Are the findings derived from the data and analyses?					
b) Is the generalisability of findings discussed?					
c) Are interpretations and extrapolations justified and supported by sound arguments?					
6. Valid conclusions					
a) Are the conclusions coherent and logically linked to the findings?					

Concerning the criteria and sub-criteria below, the evaluation report is rated:	**1**	**2**	**3**	**4**	**5**
b) Does the report reach overall conclusions on each of the five DAC criteria?					
c) Are conclusions free of personal or partisan considerations?					
7.Useful recommendations					
a) Are recommendations coherent with conclusions?					
b) Are recommendations operational, realistic and sufficiently explicit to provide guidance for taking action?					
c) Do the recommendations cater for the different target stakeholders of the evaluation?					
d) Where necessary, have the recommendations been clustered and prioritised?					
8.Clear report					
a) Does the report include a relevant and concise executive summary?					
b) Is the report well structured and adapted to its various audiences?					
c) Are specialised concepts clearly defined and not used more than necessary? Is there a list of acronyms?					
d) Is the length of the various chapters and annexes well balanced?					
Considering the 8 previous criteria, what is the overall quality of the report?					

Annexe V - The Standard DAC Format for Evaluation Report Summaries

Evaluation Title (and Reference)

Abstract
(central, 4 lines maximum)

Subject of the Evaluation
(5 lines max. on the project, organisation, or issue/theme being evaluated)

Evaluation Description
Purpose (3 lines max)
Methodology (3 lines max)

Main Findings
Clearly distinguishing possible successes/obstacles and the like where possible (25 lines/lignes max)

Recommendations

25 lines/lignes max

Feedback
(5 lines/lignes max)

Donor: European Commission	Region:	DAC sector :
Evaluation type: Efficiency, effectiveness and impact.	Date of report:	Subject of evaluation :
Language :	N° vol./pages :	Author :

Programme and budget line concerned :		
Type of evaluation :	( ) ex ante	(x) intermediate / ( ) ex post ongoing
Timing :	Start date :	Completion date :
Contact person :		Authors :
Cost : Euro		Steering group : Yes/No

Annex II. The names and CVs of the evaluators

Proposed Role in the Project: Expert 1 (civil engineer)
Category: Senior; **Staff of:** PLANET S.A.

1. **Family name:** **Murphy**
2. **First names:** John
3. **Date of birth:** 19/02/1959
4. **Passport Holder:** Irish
5. **Education:**

INSTITUTION (DATE FROM – DATE TO)	DEGREE(S) OR DIPLOMA(S) OBTAINED
University College, Dublin (UCD) - 1980	**BSc (Hons) in Civil Engineering**
Institute of Engineers of Ireland (C.Eng) - 1987	Chartered Engineer
Institute of Engineers of Ireland - 1987	European Chartered Engineer (EURING)

6. **Language skills:** (mark1 to 5 for competence:1 = excellent, 5 = poor)

LANGUAGE	READING	SPEAKING	WRITING
English	**1**	**1**	**1**
French	3	2	3
Irish	3	2	3

7. **Membership of Professional Bodies:** Engineering Institute of Zambia**,** Association of Consulting Engineers of Zambia**,** Engineer's Registration Board of Zambia, Institute of Engineers of Ireland**,** Institute of Civil Engineers, UK.
8. **Other skills: Project Cycle Management**, EU, Brussels (2001, 2009), Entry level course for Membership of Institute of Arbitrators (UK) (2009), FIDIC Coordinator, ACEZ and organiser of GAMA (Group of African Member Associations) conference in Lusaka (2001), AutoCAD Training Course, Dublin (1992)
9. **Present position:** Director of Civil Engineering, Architectural and Planning Consultancy firm based in Zambia
10. **Years within the firm:** 22
11. **Key qualifications:** (relevant to the project)

- John Murphy is a **Civil Engineer** with **32 years' experience** in design, supervision and construction of infrastructure projects both as Consultant and Contractor..
- He has been involved in **design, feasibility, monitoring and evaluation studies** during his **22 years in Zambia** both in the **Urban** and Rural **context** for various aid organisations and funding agencies.
- **He is fully conversant with the principles and working methods of Project Cycle Management and EC aid delivery methods, well familiar with EDF procedures** and has worked for **10 years on the monitoring and evaluation of EC funded infrastructure projects in ACP States**.
- He has previously **evaluated infrastructure programmes throughout Africa and is familiar with the Country Support Strategies, sector documentation and ROM methodologies.**
- **Extensive working experience in Eastern and Southern Africa.**
- **Fluent in the English language, with excellent report writing skills.**

12. **Specific Experience in the Region:**

Country	Period	Country	Period
Zambia	**Jan 1990 to Date**	Gambia	June 2012
Eritrea	Feb 2009, Jan 2010, April 2011, March 2012	Tanzania	Sep 2001, Apr 2004, Sep 2007, June 2009, Jul-Aug 2010, Jan-Feb 2013
Ethiopia	Mar 2002, 2003, Sep 2004, Nov 2009	Malawi	Feb 2004, April 2005, Feb 2011
Ghana	Dec 2002, Jun 2004, May 2010, May 2012	Sudan	Nov 2003, Oct-Nov 2005
Botswana	Oct 2005	Uganda	Apr 2001, Apr 2006, Mar - Nov 2007, Sep 2009, June 2012
Somalia	Nov 2004	Nigeria	Mar 2004
Lesotho	Nov 2001, 2002, Jan 2003, Sep 2010	Kenya	Nov 2004, Nov 2012

Sierra Leone	Mar 2012		

Proposed role in the project: Transport Economist
Category: Senior**; Staff of:** Planet SA

1. **Family name: MacDonald**
2. **First names:** Alexander
3. **Date of birth:** October 1942
4. **Nationality:** British
5. **Civil status:** Married
6. **Education:**

Institution (Date from - Date to)	Degree(s) or Diploma(s) obtained:
Cambridge University,1961-1964	**B.A. Economics**
Cambridge University,1968	**M.A Economics**

7. **Language skills:** Indicate competence on a scale of 1 to 5 (1 - excellent; 5 - basic)

Language	Reading	Speaking	Writing
English	**1**	**1**	**1**
French	2	2	2
Swahili	3	2	3
German, Spanish	3	3	3

8. **Membership of professional bodies:** Royal Economic Society; International Consulting Economists Association (U.K.);Transport Economists Group (U.K.)
9. **Other skills: Fully Computer literate** (Microsoft Office), HDM-4
10. **Present position:** Senior Transport Economist
11. **Years within the firm:** 46 years of total professional experience
12. **Key qualifications:**
    - Wide experience of road improvement studies, including several major corridor roads in Zambia and neighbouring countries;
    - Experience in evaluation of non-road transport investments including rail, port, water transport and bridge projects;
    - Extensive experience in evaluating socio-economic costs and benefits of transport improvements;
    - Experience in multi-modal transport planning in several African, Asian and South American countries;
    - Use of HDM-4 model in over 15 projects.
13. **Specific experience in the region**

Country	Date from - Date to
Zambia	1973, 1978, 1989, 1991, 1992, 1993, 1994, 1995, 1996, 1999, 2003, 2005, 2006, 2008/09
Botswana	1993, 1999/2000, 2005, 2007/08, 2009
Burundi	1975, 2013
Cameroun	1988
Congo (Brazzaville)	1992
Ethiopia	2006/07
Kenya	1967/68, 1971, 1975/76, 1980, 1981-84, 1985/86, 1987, 1988, 1989, 1990, 2002, 2006/07, 2011
Malawi	1969, 1992, 1993
Mauritius	1992, 1993
Madagascar	1992
Mozambique	2003
Rwanda	1975, 1991, 2013
Somalia/ Somaliland	2002, 2013
South Sudan	2013
Swaziland	1989, 1991, 2000/01
Tanzania	1968, 1971, 1973/74, 1975/76, 1978/79, 1989/90, 1991, 1992, 2001/02, 2003, 2007
Uganda	1968, 1971, 1975, 1983, 1984, 1985, 1986, 1990, 1991, 1994, 1995, 1997/98, 1999,

	2000, 2008/09, 2010-11,2012-13
DR Congo/ Zaire	1991

Proposed role in the project: Expert 3 (socio-economic expert)
Category: Senior**; Staff of:** PLANET S.A.

1. Family name: Tumbama
2. First name: Lewis
3. Date of Birth: 21.03.1978
4. Nationality: Zambian
5. Civil Status: Married
6. Education:

Institution (Date from- date to)	Qualification(s) obtained
University of Zambia (1999 - 2004)	**Bachelor's Degree in Social Work and Development Economics**
Serenje Boys Tech. Secondary School, Central Province, Zambia. (1992 - 1996)	Junior Secondary Certificate & General Certificate of Education/Grade 12 Certificate.

7. Language skills: Indicate competence on a scale of 1 to 5 (1 - excellent; 5 - basic)

Language	Reading	Speaking	Writing
English	**1**	**1**	**1**
Nyanja	1	1	1
Bemba`	1	1	1
Tonga	2	2	2
Lenje	1	1	1
Soli	1	1	1
Sala	4	4	2
Ila	1	3	3
Kaonde	3	4	4

8. Membership of Professional Bodies:

- Associate Member of the Water and Sanitation Association of Zambia (WASAZA),
- **Full member of the Impact Assessment Association of Zambia** (Housed within Environmental Council of Zambia)

9. Other skills: Fully Computer literate, Microsoft Office, Statistical Package for Social Sciences (SPSS).
10. Present Position: Socio-economic / Environmental expert
11. Year within Firm: 4
12. Key Qualifications

- Lewis holds a **Bachelor's Degree in Social Work and Development Economics** from the University of Zambia with concentrations in **Community Development and Change, Monitoring and Evaluation**, Social Planning, Social Research, Social Welfare and Development economics.
- Lewis is more of a **socio-economic specialist for Sustainable Development, Environmental Impact Assessment Studies** and has been conducting **socio-economic impact assessments, gender integration analysis and environmental impact assessments** and **Evaluative Community-Based Social Researches** in both Rural and **Urban** Areas of Zambia. As a **Socio-Economic, Cultural and Environmental Consultant**, Lewis has been **exposed to diverse cultural settings across all 9 provinces and 72 districts of Zambia** and has so far **facilitated more than 300 different community meetings**, mainly to do with **social and environmental issues** that are as a result of different development activities/projects taking place within their immediate environments. He is therefore **very familiar with the use of different Participatory Tools**.
- Currently, Lewis is winding up on a **Country-Wide study on Poverty and Socio-Economic Assessments** along Feeder, Trunk and District Roads in all the 9 provinces of Zambia. In this study, Lewis has been leading the team in **Community and other Stakeholder Consultations** using different participatory methodologies.

He is **fluent in the English language**, both written and spoken and possesses **excellent report writing**.

Annex III. Report's Methodology

PROJECT MANAGEMENT AND MONITORING

Personnel Management

This element comprises the provision of the necessary project personnel, administration, briefing of staff, office and project facilities, accommodation, transportation and communications. The Team Leader will carry out all the duties related to the proper administration of the consultant's office and staff. This will include accounting and office operations such as photocopying, communications, consumables, transport arrangements and support staff assignments.

Authority for technical matters as well as local office administration will be vested in the Team Leader.

Financial Management

The Project management functions of budgeting, accounting, records and controls will be conducted in accordance with accepted practice. Invoices will be prepared according to the Financial Proposal and Payment Schedule.

Project Control

This component covers the overall project management functions of planning, directing and control. It will include monitoring progress, reporting to the Client, review of annual programmes and budget, liaison with the Client and other agencies involved.

Under this activity, standard project management tools will be used to assist with the overall scheduling and planning of all project activities.

The Consultant will prepare a Project Master Schedule at the outlet of the assignment. It will be a summary of all tasks in graphical and Grant chart form. Updating of the schedule will be done on monthly basis, and substantial changes will be pre-approved and documented to reflect changes to the original timing and scope. The schedule will be used for detailed planning, critical path analysis and resource analysis, and will be updated with actual progress and included in progress reports.

The Consultant recognises that effective liaison between the team members and the Client is essential to the ultimate success of the project. In selecting staff for the project, we have chosen individuals with strong interpersonal skills needed to effectively perform this important activity. Liaison will primarily be the responsibility of the Team Leader. Tasks under this activity will include all general communications on project status, progress issues, schedules, projections, problems, potential problems that may arise and recommendations. It will include the monthly project meetings and will also include a good deal of time in both telephone and personal informal conversations.

The tasks required to fulfil the services are described below.

Task 1 Mobilisation

The Team Leader will ensure that accommodation, vehicles, computer and secretarial support are available so that the activities can begin without delay and at full efficiency. The Transport Economist has arranged to fly to Zambia on 29th September in readiness for the kick-off meeting at 30th September 2013.

Task 2 Consultation Meetings

The Team Leader will liase with the Client in order to set up a series of consultation meetings with the major stakeholders. These include the National Authorising Officer (NAO) of the EDF, Road Development Agency and road users. It will be important during these meetings to identify other involved parties such as the works Consultant and Contractor, suppliers and user groups etc.

Task 3 Data Collection/Field Visit

The Team Leader will liase with the EC, NAO, RDA and all other pertinent Departments in order to complete the collection of all the documents and data that will form the starting point of the project. Documents include the design, financing agreement, tender and contract documents prepared by others and the successful tender by China Geo Corporation and the correspondence throughout the supervision by Nicholas O'Dwyer and Partners International consultants.

Each member of the team will study all the available documents that are relevant to his specialist activities. The Team Leader will study all the documents so that he is fully appraised of all aspects and he will ensure that each team member is made aware of all the source documents available and potentially useful to him. We are aware that the Defects Liability Period has expired and that outstanding financial matters relating to claims and measurements are due for payment.

Questionnaires will be prepared with the input of each team member to enable structured interviews to take place and using participatory techniques as a favoured means to elicit views.

Task 4 Stakeholder Interviews

The study will continue will continue through casting as wide a net as possible in order to carry out structured interviews with interested parties. During this time the annexes to the report will be prepared containing:

- Terms of Reference
- Comments on the TOR
- CVs of Evaluation Team
- Methodology applied
- Literature and documentation consulted
- List of persons/organisations consulted
- Logical Framework matrix (as contained in the financing agreement together with any subsequent modifications)
- Technical annexes

A debriefing meeting was organised for 23rd October 2013.

Task 5 Draft Report

The objective of the study is to provide the Government of Zambia with sufficient information to assess the impact of the EU intervention. The report will be structured in accordance with the requirements of the Project Cycle Management (PCM) currently in use for EU projects and programmes in developing countries. PCM was introduced by the European Commission in the early 1990s to improve the quality of project design and management and thereby to improve aid effectiveness. PCM

obliges practitioners in project design to focus on the real needs of the beneficiaries by requiring a detailed assessment of the existing situation and by applying the logical framework method. Right from the beginning, aspects concerning sustainability are incorporated in the project design. The report will comment on the components of the programme such as:

- Civil Works
- Consultancy contract for design review and supervision
- Audits

These components were carried out within the financing budget of €15,000,000. The PCM and Logical Framework Matrix will be used to compare baseline information and will be used in formulating conclusions and recommendations.

The draft report will be prepared in the proposed model for the final report under the following headings:

- Preamble
- Summary
- Project preparation and design
- Relevance of the project
- Efficiency
- Effectiveness
- Impact
- Sustainability
- Conclusions and recommendations.

Task 6 Comments from Client

As per the Terms of Reference, we have allowed a period of 4 weeks in which to receive comments from the Client. During this period the project staff will be available for consultation if required.

Task 7 Final Evaluation Report

Following receipt of the comments from the Client we anticipate that 1 week will be adequate in which to take into consideration the points raised and to finalise the report. The report will analyse the original project design that resulted in the financing agreement. It will be important to assess the degree of consultation that was used during the feasibility stage and which baseline data was collected to compare with current circumstance.

Relevance can be defined as the appropriateness of project objectives to the problems that it was supposed to address, and to the physical and policy environment within which it operated. The quality of design depends on the logic and completeness of the project planning process, and the internal logic and coherence of the project design. In terms of relevance, the study will examine Government policies, regional and institutional issues. Some of these are evidenced in the poverty reduction strategy and the transport policy that envisages changes within the transport sector and the socio-economic changes that these policies may bring. Projects are relevant if they are linked to sectoral, national and Commission objectives and if the beneficiaries have been involved in the planning process. It is important that stated objectives are measurable in the form of Objectively Verifiable Indicators.

Efficiency can be defined as the cost, speed and management efficiency with which inputs and activities were converted into results, and the quality of the results achieved. The study will examine the efficiency of the programme components, their timing, costs, organisation and management. This will involve cross-referencing of similar projects and an assessment of donor coordination and the level of monitoring that was carried out both by the EC and Government.

The **effectiveness** can be defined as an assessment of the contribution made by results to achievement of the project purpose, and how assumptions have affected project achievements. With reference to the logical framework matrix the evaluation will make an assessment of the extent that the results achieved have facilitated the Government of Tanzania to achieve its policy objectives. The underlying assumptions at the programme design will also be used to evaluate the effectiveness of the programme and whether these assumptions were accurate and realised and whether they should be altered in future.

Impact can be defined as the effect of the project on its wider environment, and its contribution to the wider sectoral objectives summarised in the project's overall objectives. The study will evaluate the impact of the programme in terms of the General Development Objectives of the European Union. These are also GRZ objectives as contained in their Country Support Strategy and Poverty Reduction Strategy Programmes and include aspects such as poverty alleviation, sustainability, human resources, environmental and gender issues and support of private initiative. Both positive and negative impacts will be measured and reported upon.

Sustainability can be defined as the likelihood of a continuation in the stream of benefits produced by the project, particularly continuation of the project's activities and achievement of results, and with particular reference to development factors of policy support, economic and financial factors, socio-cultural aspects, gender, appropriateness of technology, ecological aspects, and institutional capacity. A financial analysis will be prepared which will illustrate the costs, benefits and sustainability of the programme. The economic analysis will examine the effect on income distribution and budgetary effects. An attempt will be made to anticipate the future sustainability of the road maintenance. This will include the ongoing policy and financial support of the Government and whether the costs will be recovered in time. Socio-cultural issues will be addressed to evaluate whether the concept of ownership exists and as such may contribute to the sustainability. The study will examine to what extent is the project embedded in the local institutions and whether the beneficiaries will continue to gain benefit from the project in the future. Environment issues will be examined under a separate heading and in particular, how the project has coped technically, financially and managerially since the handover. Factors that ensure sustainability include policy support, appropriate technology, institutional and management capacity, economic and management capacity, economic and financial viability, socio-cultural and gender issues and environmental protection.

The report will lead to a series of logical conclusions under each heading and each of these will have an associated recommendation. It is important to draw conclusions from lessons learned in such a manner that may affect similar projects in the future. In this respect the orientation of the logical framework matrix will be examined and a revised LFM will be contained in the final recommendation.

Task 8 Client Liaison

The Consultant's team will maintain the closest possible liaison with the EC, NAO and RDA. As the study progresses the awareness of issues leading to recommendations will be continuously evolving. It is essential, at each stage of development, that the Consultant should discuss his ideas with the Client. Failure to do so this can lead to wasted time, on the Consultant's part, and lack of satisfaction on the Client's.

Data Collection Procedures/Methods
Consistent with the proposed study design, stated above, and in order to generate both quantitative and qualitative data required for the evaluation study, the following four techniques/tools will employed:

- Literature review
- Structured questionnaire
- Key informant interviews; and
- Focus group discussions.

Literature review
The aim of literature review is to obtain insight about the programme and this involves reviewing various programme documents including the Evaluation of the Pilot Phase, the ROM reports, technical reports, baseline reports and a review of the intervention logic of the project. This will assist the team to provide answers to those questions relating to the programme implementation, output, outcome and impact.

Structured questionnaire
This is an individual interview that will obtain representative information, which is more personal than group interviews. Different individuals (desegregated according to gender, income bracket and or type of goods they trade in) will be administered both in the non-beneficiary (control) markets and beneficiary (treatment) markets; and these will be the sources of primary quantitative data which will be coded and analysed, using Statistical Package for Social Scientists (SPSS) and STATA. The use of the control and treatment group will assist in comparing the differences between the two groups whilst ascertaining the impact of the project.

Key informant interviews
These interviews will be held with various stakeholders and local decision-makers who are knowledgeable about the project and the operations of the markets in order to get their views on whether the project has performed well in achieving its intended objectives.

Focus group discussions (FGDs)
Consistent with the requirements of the paradigm/standard on data collection techniques, the study will employ the FGD as a highly participatory data collection procedure. The FGD will be conducted mainly in Bemba and Nyanja, the predominant local languages used in the proposed study areas, and with consent of the participants, will be recorded. The discussion will be guided by a set of questions developed in light of the TORs.

Focus group discussions will be stratified according to the goods and products the beneficiary trade in. These groups will include:

Annex IV. Logical Framework Matrices (original and improved)

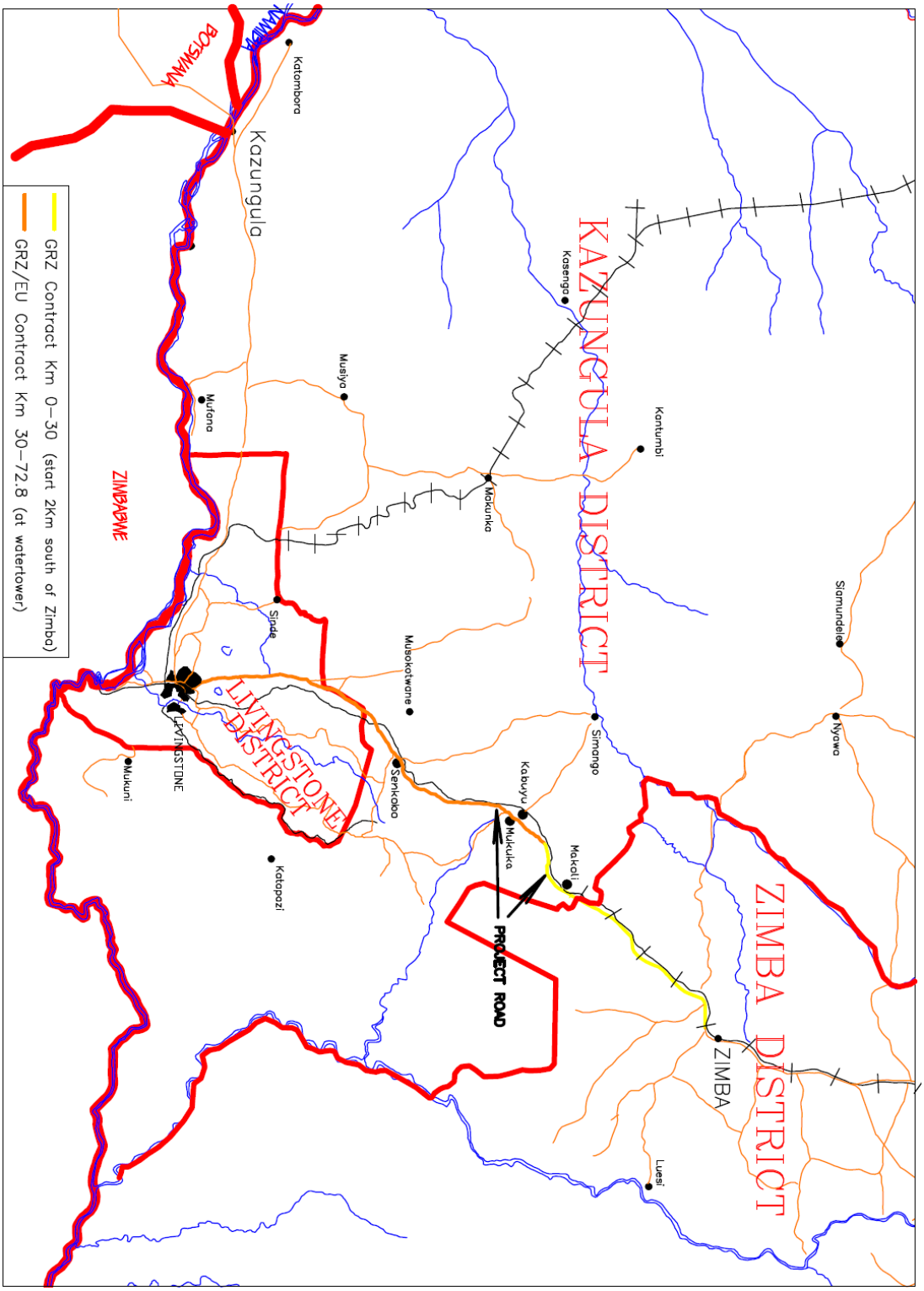
ORIGINAL LOGICAL FRAMEWORK MATRIX - Rehabilitation of Zimba-Livingstone Road

	Intervention Logic	**Objectively Verifiable Indicators**	**Sources of Verification**	**Assumptions**
Overall objective	Promotion of equitable economic growth, regional integration and poverty reduction in Zambia	Increased volume of imports and exports through Vic Falls border to and from various destinations in Zambia and neighbouring countries	• Central Statistics Office • GDP and trade statistics on Zambia and East-Southern Africa • Customs records at Zambia Revenue	
Project purpose	To contribute to the establishment of a safe and sustainable national road network achieved by the end of ROADSIP II (2013)	• Vehicle operating costs reduced • Road condition good 15 years after end)	VOC study by MoCT End-of-project evaluation ROADSIP quarterly and annual reports	Competitive transport environment where VOC savings are passed on to economic operators who respond to opportunities
Results	72 km of the Zimba-Livingstone Road rehabilitated and upgraded and its technical life extended by another 15 to 20 years	Acceptance of works	Final supervising consultant's report and final acceptance certificate	• Efficient truck overload control and management of roads by RDA • Sufficient maintenance funding in future
Activities	Reconstruction of the existing base as a stabilized sub base layer and construction of a crushed stone layer and asphalt wearing course Upgrading of the road profile by constructing shoulder with double surface dressing Upgrade of the existing drainage system Supervision services	**Means:** Works contract Supervision contract	**Cost (in €):** ❑Works 11,917,000 ❑Supervision 1,650,000 ❑Audit: 80,000 ❑Evaluation 280,000 ❑Subtotal: 13,927,000 ❑Contingency: 1,073,000 **Total: 15,000,000**	• Successful tendering process and competent contractor and consultant engaged • Competent project management staff at RDA and NRFA appointed • Cost of oil and bituminous products will not continue to escalate

IMPROVED LOGICAL FRAMEWORK MATRIX - Rehabilitation of Zimba-Livingstone Road

	Intervention Logic	**Objectively Verifiable Indicators**	**Sources of Verification**	**Assumptions**
Overall objective	Promotion of equitable economic growth, regional integration and poverty reduction in Zambia	Increased volume of imports and exports through Vic Falls border to and from various destinations in Zambia and neighbouring countries	• Central Statistics Office • GDP and trade statistics on Zambia and East-Southern Africa • Customs records at Zambia Revenue	
Project purpose	• To prevent transport cost increases on the project road by timely maintenance intervention • To reduce accident numbers • To reduce vehicle overloading	• Traffic flows from project design to completion • Road condition surveys using the IRI index • % of weighed vehicles that are overloaded • Accident numbers	• RDA's RMMS data for Project Road from project design to completion • RDA weighbridge data • Traffic police data	• Specific impact assessment and calculation of change in VOCs carried out by RDA • Enforcement of law concerning overloading
Results	42.8 km of the Zimba-Livingstone Road rehabilitated and upgraded and its technical life extended by another 15 to 20 years	Acceptance of works	Final supervising consultant's report and final acceptance certificate	• Efficient truck overload control and management of roads by RDA • Sufficient maintenance funding in future
Activities	Reconstruction of the existing base as a stabilized sub base layer and construction of a crushed stone layer and asphalt wearing course Upgrading of the road profile by constructing shoulder with double surface dressing Upgrade of the existing drainage system Supervision services	**Means:** Works contract Supervision contract	**Cost (in €):** ❑Works 11,917,000 ❑Supervision 1,650,000 ❑Audit: 80,000 ❑Evaluation 280,000 ❑Subtotal: 13,927,000 ❑Contingency: 1,073,000 **Total: 15,000,000**	• Successful tendering process and competent contractor and consultant engaged • Competent project management staff at RDA and NRFA appointed • Cost of oil and bituminous products will not continue to escalate

Annex V. Map of Project Area


BOTSWANA
NAMIBIA
ZIMBABWE
Katombora
Kazungula
Mufona
Musiyo
Sipde
LIVINGSTONE
Mukuni
Katopozi
Senkoloo
Musokotwane
Mukuka
Kasenga
Kantumbi
Makunka
KAZUNGULA DISTRICT
LIVINGSTONE DISTRICT
Kabuyu
Simango
Makoli
PROJECT ROAD
Siamundele
Nyawa
ZIMBA
ZIMBA DISTRICT
Luasi
GRZ Contract Km 0-30 (start 2Km south of Zimba)
GRZ/EU Contract Km 30-72.8 (at watertower)

Annex VI. List of Persons/ Organizations Consulted

No	Name and Organisation	Contact
1	Sigvard Bjorck, Head of Infrastructure Section, European Union Delegation (EUDEL)	sigvard.bjorck@eeas.europa.eu
2	Liso Matanga Simbeleko, Programme Officer, EUDEL	liso.simbeleko@eeas.europa.eu
3	James McNulty	james-francis.MCNULTY@eeas.europa.eu
4	Temwani Chihana, National Authorising Office of the Ministry of Finance and National Planning (NAO)	tchihana@nao.gov.zm
5	Eleanor Ngwira, Financial Officer, NAO	engwira@nao.gov.zm
6	Mr. Charles Mushota, Director and CEO, RDA	cmushota@roads.gov.zm
7	Mr. Remmy Chanda, Director of Construction, RDA	rchanda@roads.gov.zm
8	Mr. William Mulusa, Senior Engineer, Planning	wkmulusa@roads.gov.zm
9	Mr. Gershom Chilikusha, Environmentalist, RDA	
10	Mr. Patrick Lubasi, Axle Load Control Unit, RDA	
11	Mr. Stephen Betwe, Axle Load Control Unit, RDA	
12	Mr. Chama, Senior Engineer, Regional Manager's Office Southern Province	
13	Mr. Robby Mwila, Weighbridge Operator, RDA	
14	Mr. Banda, Deputy Director, Safety, RTSA	
15	Mr. Mubanga Mulenga, Road Safety Engineer, RTSA	
16	Mr. Li Jingpin, Regional Manager, China Geo Corporation	
17	Li Jue, Project Manager, China Geo Corporation	
18	Mr. Pat Lonergan, Nicholas O'Dwyer and Partners	
19	M/s Linda Siwale, Provincial Planner Southern Province (Socio-economics), Ministry of Finance	
20	Mr. B Choonga, Provincial Physical Planner, Southern Province, Ministry of Local Government and Housing	
21	Mr. Nyambe, District Commissioner, Zimba	0977 850190
22	Mrs. V Chikoti, Town Clerk, Livingstone City Council (LCC)	
23	Mr. Samuel Mwindula, Senior Engineer, LCC	
24	Mr. Chilumba, Officer Commanding, Central Police	0967 868846
25	Mr. Kabozha Clifford, Deputy Divisional Traffic Officer, Central Police	0976 212113
26	Inspector Posa, Central Police	0977 769385
27	Mr. Lungu, Assistant Commissioner, Zambia Revenue Authority	0977 875988
28	Mr. Zulu, Council Secretary, Kazungula DC	0977 620607
29	Mr. Christopher Siasnyanga, Financial Director, KDC	
30	Mr. Myles Daka, Chairman, Chamber of Commerce	
31	Mrs. Mwendapole, Secretary, Chamber of Commerce	0977 427229
32	Serah Masonde, Tourism Development Officer, Ministry of Tourism and Arts	0964 600407

Annex VII. Literature and documentation consulted

No	Description
1	Zambia-European Community Country Strategy Paper and National Indicative Programme for the period 2008 - 2013
2	Country Level Evaluation Zambia, September 2012, ECO Consult
3	Rehabilitation of the Zimba to Livingstone Road Financing Agreement and Addendum between EC and the Republic of Zambia
4	Contract A and B Provisional Acceptance Report, July 2011, Nicholas O' Dwyer and Partners
5	Contract A Summary Statement – Final Account, August 2011, NAO of the EDF
6	Progress Report Nos 1 (June 2009) to 23 (May 2011), Nicholas O' Dwyer and Partners
7	Trunk Road T1 Zimba to Livingstone, Pavement Review, May 2008, Nicholas O' Dwyer and Partners
8	Trunk Road T1 Zimba to Livingstone, Economic Review, May 2008, Nicholas O' Dwyer and Partners
9	Financial Audit of Trunk Road T1 from Zimba to Livingstone, December 2010, Moore Stephens
10	1st, 2nd, 3rd,4th and Final Technical Audit Reports, 2010/2012, ARUP
11	Complementary Services Final Audit Report, February 2013, Paul Basondole
12	Technical Audit of EC funded projects under Sector Budget Support; Phase II Civil Works, Hydratec, August 2007
13	Procurement and Technical Audit of Roads Projects Managed by the RDA in Zambia, Hydratec, 2008
14	Evaluation of the Monze-Zimba Road, ASCO 2003
15	Assessment and Gap Analysis of the Energy Sector in Zambia – Final Report Ral/Italtrend, 2013
16	2006 – 2009 Attorney General Report on Road Development Agency
17	End Term Review of Sector Policy Support Programme (SPSP) Periodic Maintenance of Trunk, Main and District Roads Zambia, Grontmij December 2011
18	Rehabilitation of Road T1, Zimba to Zimbabwe Border, Design Report, WSP/Kiran and Musonda, 2004
19	Economic Benefits of an Efficient North-South Corridor, Final Report, Alta Innovations, March 2009
20	European Court of Auditors, The EDF Contribution to a Sustainable Road Network in Sub-Saharan Africa, Special Report No 17, 2010

Annex VIII. Other Technical Annexes

Traffic and Road Design Loading

1. Past and Present Traffic Flows

Various traffic data for the Zimba-Livingstone road are available from RDA Highway Management System files, and also from the design report for the road carried out by WSP International with Kiran and Musonda in 2004. The data available may be summarised as shown in Table 7.

Since the 2004 study was undertaken for the whole 86.9 km between Zimba and Victoria Falls, it included data for a station between Livingstone and the Falls, as well as one near Zimba. Also, since current RDA survey stations along this section of the T 1 comprise Point 1 near Zimba and Point 61 between Livingstone and the Falls, and since WSP used the heavier flows at Livingstone in forecasting of road loading, it is considered useful to present data for both stations. Although both stations appear to have moved their exact locations from time to time since 1995, the Livingstone station has remained between the town and the Falls, and the Zimba station has generally remained within 15 km to the south of the town. Exceptionally the WSP count of 2003 was at Makoli School, 25 km south of Zimba, but it is unlikely that there will have been any significant traffic variations over this open-road section. The current HMS Stations 1 and 61 are located near Zimba village and just south of Livingstone respectively.

Table 7 Traffic Data for Stations Between Zimba and Victoria Falls, 1995-2013

(ADT)

Source:	RDA	RDA	WSP	RDA	RDA	RDA	RDA
Year:	1995	2000	2003 *	2006 **	2008	2011	2013
Livingstone (now Point 61)							
Light vehicles	1,071	1,668		2,653	2,431	1,669	2,413
Buses	46	29		389	383	185	177
Single trucks	66	167		64	124	83	21
Multiple trucks	37	46		6	154	117	74
Total ADT	**1,220**	**1,910**		**3,113**	**3,092**	**2,054**	**2,684**
Zimba (now Point 1)							
Light vehicles	234	275	311	1,580	309	456	837
Buses	23	39	33	604	108	67	64
Single trucks	35	49	36	810	57	90	65
Multiple trucks	34	54	82	850	214	299	650
Total ADT	**326**	**417**	**462**	**3,844**	**689**	**913**	**1,616**

Notes: * WSP project count at Makoli primary school, approximately 25 km south of Zimba

** The 2006 RDA count for Station 1, Zimba, appears very much out of line, but is reproduced as shown in the HMS data base.

Since the road runs through lightly populated terrain, the flows at the Zimba station may be assumed to fairly represent the average flows over most of the Zimba-Livingstone road.

Between 1995 and 2003, traffic grew at an average 4.5 % per annum, which corresponds well with known historic growth rates. Then, between 2003 and 2008, at a time when the road was in an increasing state of disrepair, the recorded growth rate increased to 8.3 % per annum. It is notable that there was rapid growth in these years in heavy multiple trucks, whose recorded daily flow rose in five years from 82 vehicles per day to 214 vpd. Over these years Zambia, and other countries in the region, were enjoying a time of rising economic growth, and this was no doubt reflected in traffic growth on this road, as on many others.

With the bulk of rehabilitation works over the whole Zimba-Livingstone road being carried out in 2009 and 2010, the years 2008 and 2011 represent the last year of unimproved road and the first year of improved road. Over these three years, traffic at Station 1 grew by 32.5 %, at an average rate of 9.8 % per annum.
The RDA traffic data are usefully broken down into four vehicle groups, namely light vehicles, buses, single-unit trucks and multiple trucks. A note of caution should be added, that the group definitions are not always consistent between years; for instance, medium delivery vehicles at Zimba are classified as buses in 2008, but as light vehicles in 2011.

It is also to be noted that the flow of multiple trucks (of four or more axles) has increased much more rapidly than those of other vehicles. Average annual growth rates between 1995 and 2011 may be summarised as in Table 8 below.

Table 8 Disaggregated Traffic Growth Rates, 1995-2011

(% per annum)

	Multiple Trucks	**Other Vehicles**	**All Vehicles**
1995-2003	11.6	3.3	4.5
2003-2008	21.1	4.5	8.3
2008-2011	11.8	8.9	9.8

A fuller breakdown of RDA traffic flows at Zimba in 2008 and 2011 is given in Table 9. These were taken according to normal RDA practice over a continuous five-day count period. Daytime values relate to the hours 0600-1800, and night-time values to 1800-0600. For the year 2011 there is an evident minor discrepancy between the total daily average flows shown in Tables 1 and 2; the figures below are derived from the individual recorded hourly flows through the five survey days.

Table 9 Detailed Traffic Flows at Zimba, 2008/2011

(24-hour ADT)

	April 9-14, 2008			**June 8-13, 2011**		
	Day	**Night**	**24 Hrs**	**Day**	**Night**	**24 Hrs**
Passenger cars	129.0	38.4	**167.4**	160.8	77.4	**238.2**
Microbuses	12.2	7.4	**19.6**	36.0	9.8	**45.8**
Light delivery vehicles (LDV)	91.4	28.0	**119.4**	77.8	35.4	**113.2**
Buses	43.6	24.2	**67.8**	39.6	28.2	**67.8**
Med. delivery vehicles (MDV)	26.2	15.4	**41.6**	36.4	21.8	**58.2**
Rigid trucks, 2-4 axles	32.0	21.4	**53.4**	46.4	32.0	**78.4**

Rigid trucks with trailers	2.0	1.6	**3.6**	3.4	2.8	**6.2**
Semi-trailers, 3-7 axles	35.0	25.6	**60.6**	120.2	115.2	**235.4**
Double semi-trailers	72.4	75.6	**148.0**	22.2	35.2	**57.4**
Other vehicles	0.2	0.4	**0.6**	0.2	1.0	**1.2**
Motor cycles	4.8	0.8	**5.6**	4.2	0.4	**4.6**
Totals	**448.8**	**238.8**	**687.6**	**547.2**	**359.2**	**906.4**

Source: RDA Highway Management System

It is seen that substantial traffic increases were recorded for most vehicle groups. Bus flows remained the same, while LDV flows showed a small decrease. A large decline has been recorded for double semi-trailers, but this may arise from variations in the classification used for the 7-axle double semi-trailers which now predominate on the route. If semi-trailers and double semi-trailers are combined, their total average daily flow rose from 208.6 in 2008 to 292.8 in 2011, or by just over 40 %.

A substantial shift to night-time travel can be observed, with the overall night-to-day traffic ratio rising from 53.2 % in 2008 to 65.6 % in 2011. This is likely to reflect a greater willingness to travel at night when it is known that there are no potholes on the road. This trend again applies to most vehicle classes.

A further large traffic increase of 77.0 % is recorded between 2011 and 2013, including a rise of 83.6 % for light vehicles and one of 117.4 % for trucks. The total of 1,616 vehicles per day for the RDA 2013 count was significantly higher than evaluation team estimates of 1,200-1,300 vpd based on moving observer counts while in the field. But, with traffic anywhere in the range 1,200-1,600 vpd, it is in any case clear in any case that substantial further traffic growth has taken place in the three years since completion of the road rehabilitation.

This conclusion is supported by comments made by stakeholders interviewed in Livingstone, including the Town Clerk and the Traffic Police, who informed us that reduction of driving time up to Zimba from three or more hours to less than one hour had greatly increased traffic, and allowed traders from Kalomo and Choma to sell their produce in Livingstone markets. The Zambia Tourist Board commented that tourists could now much more easily continue into Zambia, and visit Kafue National Park and other destinations, whereas they had formerly been dissuaded from doing so by the very poor condition of the road. The District Commissioner at Zimba stated that farmers in his district were benefiting substantially from the ability to market their produce in Livingstone, and also at sites along the roadside.

2. Traffic and Road Loading Forecasts

2.1 WSP Forecasts

The original WSP traffic forecasts, on which axle load estimates for an assumed 20-year road lifetime were based, were made for the relatively heavily trafficked Victoria Falls-Livingstone section which at that time was expected to be part of the project. The forecasts start from an assumed traffic flow of 2,207 vpd in 2003, though the text does not make it clear how this estimate was derived. Constant annual growth rates of 3 % for light vehicles, and 4 % per annum for trucks and buses, were then applied to give a central forecast of 4,646 vpd in 2027, including 684 trucks and 93 buses. Alternative low and high forecasts were also made, reaching 3,209 and 6,452 vehicles per day respectively.

Axle load estimates were based on a one-day survey carried out at the Kafue weighbridge in April 2003, whose results may be summarised as in Table 10 below.

Table 10 Summarised Weighbridge Results at Kafue, April 2003

Vehicle Group	No of Vehicles	Average ESA
2-3 axles	27	0.72
4-6 axles	89	3.63
7-9 axles	61	7.45
All Heavy Vehs	**177**	**4.50**

Using the Kafue average equivalent standard axle (ESA) values according to numbers of axles from 2 to 9, Table 4 shows predicted road lifetime axle loads. For a 20-year life, the medium forecast was computed as 9.06 mn ESA. Details are shown in Table 11.

Table 11 Forecast Lifetime Road Loadings, T1 at Zimbabwe Border

Traffic Growth	Low	Medium	High
Design Life (years)			
15	5.16	6.09	6.63
20	7.25	9.06	10.16
25	9.56	12.67	14.66

2.2 Revised Consultant Forecasts

The Consultant appointed to supervise the project, Nicholas O'Dwyer (NOD), was tasked with updating the earlier detailed design, including the preparation of new traffic and road loading forecasts.

On this occasion, traffic was based on the RDA counts for Zimba, assuming growth at 5.0 % per annum to 2017, and then at 3.0 % per annum to 2030. Although Zimba lies at one end of the whole project road (and actually 30 km short of the start of the EU-assisted portion of the project), it is considered a reasonable approximation to use Zimba traffic levels as representative of Kms 30-72.8. The revised forecasts are shown in Table 12. It may be noted that the flows shown for 2007 appear actually to be derived from the RDA traffic count of 2008, though with some variation in detailed vehicle group classifications. Forecasts are seen to total 1,122 vpd in 2017, including 67 buses and 438 trucks, rising to 1,648 vpd in 2030, including 99 buses and 643 trucks.

Table 12 Revised Traffic Forecasts, 2007-30

(ADT)

	2007	2008	2017	2018	2030
Light vehicles	379	398	617	636	906
Buses	41	43	67	69	99
Rigid trucks	55	58	90	92	132
Multiple trucks	214	224	348	358	511
Totals	**689**	**723**	**1,122**	**1,156**	**1,648**

Source: 'Pavement Review', Nicholas O'Dwyer & Co, April 2009

New ESA values were used, based on a 7-day survey carried out by the RDA's Axle Load Unit in September and October, 2007. On the basis of these detailed results for

1,844 trucks and buses, the following unit ESA values were used to estimate future loading for the project road:

Light vehicles	0.01
Large buses	1.4
Rigid trucks	1.3
Multiple trucks	4.0.

As a result, the estimated lifetime road loading, presumably for the critical travel direction, was reduced from 9.1 mn ESA to 7.9 mn ESA.

3. Comments

3.1 Traffic Forecasts

There must be some concern over the likely accuracy of the traffic forecasts and road lifetime design loads. The revised NOD forecasts assumed overall growth rates of 5.0 % per annum from 2007 to 2017, falling to 3.0 % between 2017 and 2030. They thus indicated that the traffic flow at Zimba would rise from 689 vpd in 2007 to 837 in 2011 (the project opening year), then to 923 in 2013; 1,226 in 2020; and 1,648 in 2030 (final year of the 20-year benefit period). Numbers of heavy trucks were forecast as 214 in 2007, rising to 260 in 2011, 381 in 2020, and 512 in 2030.

Yet in practice RDA counts show that by 2011, total flows had risen to 913 vpd, including 299 multiple trucks. Total flows were thus already 9 % above the forecast figure, and multiple truck flows 15 % above the forecast. Furthermore, a very large increase to 1,648 vpd, including 511 multiple trucks, has been reported from the RDA counts of June 2013; even if for some reason these numbers are above trend, it seems clear that traffic has already gone well above 1,000 vpd, and thus well above the forecast. Also, with expected completion of the Kazungula bridge to Botswana in the next two years, traffic from South Africa and Botswana via Kazungula and Livingstone may be expected to increase further.

The overall traffic growth rate of 5 % per annum to 2017, falling to 3 % thereafter, seems modest in view of higher rates that have been observed on many roads since 2000. If higher rates actually occur, the road design life in terms of standard axles will be reached earlier than the 20 year life used in project evaluation and pavement design. As an example, if the same starting traffic from 2007 were to grow at 2 % per annum more, that is by 7 % per annum to 2017, followed by 5 % thereafter, the cumulative standard axle total originally expected to be reached in 2030 would now be reached during 2027, that is slightly more than three years earlier than expected.

3.2 Overloading

Overloading of heavy freight vehicles has been a persistent and serious problem in Zambia for many years. This was exemplified by an independent axle load survey carried out north of Livingstone over a week in September and October 2002, which was reported in the Final Evaluation Study for Rehabilitation of the Monze-Zimba Road, carried out by ASCO in 2003. Covering 791 trucks of between two and ten axles in both directions, this survey gave the following results among others:

- As against a gross vehicle weight restriction of 56 tonnes, 104 out of 276 southbound trucks of five or more axles were loaded above the maximum, including 51 (18.5 %) loaded to 80 tonnes or more, and 31 (11.2 %) to more than 100 tonnes. In the northbound direction, 207 out of 345 vehicles of five or more axles were loaded above the maximum, including 45 (13.0 %) loaded to 80 tonnes or more, and 16 (4.6 %) loaded to more than 100 tonnes. The 31 southbound vehicles loaded to over 100 tonnes had an average equivalent standard axle (ESA) value of 75.7, while the

16 northbound vehicles over 100 tonnes had an average ESA value of 77.8. By comparison, a 7-axle vehicle loaded to the maximum GVW of 56 tonnes and confirming to the axle load limits should not generate an ESA value of more than about 10.

- Individual trailing axles are generally restricted to not more than 10 tonnes for a single axle, 9 tonnes per axle for a double axle, or 8 tonnes per axle for a triple axle. However, of 1,875 trailing axles on southbound trucks, 439 (23.4 %) were loaded to over 10 tonnes, 217 (11.6 %) to over 12 tonnes, and 49 (2.6 %) to over 15 tonnes. In the northbound direction, out of 2,304 trailing axles weighed, 536 (23.3 %) were loaded to over 10 tonnes, 160 (6.9 %) to over 12 tonnes, and 20 (0.9 %) to over 15 tonnes.

At that time there was clearly a serious vehicle overloading problem. Since then, an axle load unit has been set up in RDA, and some stringent measures have been taken to improve control of the problem. These include the new electronic weighbridge at Livingstone, which automatically records the weights of each individual axle group in the data systems of both the station and the central control office, also displaying these weights publicly on a screen beside the weighbridge. We were informed at the weighbridge that before the recent construction of the new weighbridge station, around 80 vehicles per day were being stopped for overloading, whereas with the new station, and despite an increase of around 50 % in traffic, the number stopped had reduced to about 50 vehicles per day. This is encouraging.

Nevertheless, the culture of overloading had become well embedded over many years in Zambia and also in many other countries in the region, and it will be necessary for the authorities to remain vigilant, especially against malpractices such as trucks off-loading part of their loads for a few kilometres as they pass the weighbridges; use of side-roads to avoid the stations; and occasionally running of the weighbridges without stopping (though a deterrent fine is now imposed for this offence). It is, however, essential that the problem remain under control, as persistent vehicle overloading is a sure way of bringing about premature failure of the road.

An encouraging feature observed during the field visit was that 6-axle semi-trailers (of 1-2.3 axle formation) and 7-axle double semi-trailers (of 1-2.2-2.2. formation) seem now to predominate on the road, with a decrease in the numbers of 8 to 10-axle truck-trailer combinations which used to be much more common, and which accounted for many of the seriously overloaded vehicles observed in the 2002 survey. With this apparent change in vehicle composition, confirmed by the RDA Axle Load Unit, and with the weighbridges enforcing the stipulated load limits for both gross vehicle weight (56 tonnes) and for individual axle groups, it is to be hoped that the longstanding overloading problem will at least now be ameliorated in Zambia. If, however, it reasserts itself in future, then the possible shortening of the Zimba-Livingstone road life due to higher-than-forecast traffic flows may be compounded by higher-than-forecast average vehicle axle loads. The overloading risk is exacerbated by the higher-than-forecast growth rates for multiple trucks that have been recorded in recent years.

4. Conclusions

It is concluded that there is some risk that the 20-year road design life could be shortened by two factors, namely higher-than-expected traffic growth and possible continued vehicle overloading. Another factor which has shortened road lives in both Zambia and neighbouring countries has been insufficient routine and periodic maintenance, and it is also essential that a rigorous maintenance routine, including preventative reseals or overlays, should be scrupulously observed.

Questionnaires Utilised in the course of the Survey

FOCUS GROUP DISCUSSION

Location of Meeting: **District:**

Registration of participants (age, sex, marital status, occupation)

COMMUNITY PARTICIPATION

1. Where you involved in any community consultations prior to the commencement of the road rehabilitation works?
   1. Yes
   2. No

2. What kind of activities were you involved in during consultations? (Allow the community to list activities, but probe on their engagement in activities listed below if these are not mentioned)

1.	Identification and routing of detours	
2.	Identification and siting of borrow pits and quarries	
3.	Identification and siting of workers camps	
4.	Identification and siting of water abstraction points	
5.	Other (specify)…… ……	

3. In your view, did the contractor take into account your views during the construction phase?
4. Were there any trainings/awareness programmes undertaken for the community on health and safety before and during construction?
5. In your view, are there adequate road signs covering the needs of pedestrians and cyclists?
6. Following the completion of the road works, what is the community's impression about the quality of works?
7. Was the project undertaken within a reasonable period or did it take too long?
8. Have the detours been completely abandoned following the completion of work?
9. If No, how are these detours being used?
10. How has the community dealt with the presence of borrowpits and quarries that were used during the rehabilitation phase?
11. And what effects have these had on the communities?
12. What notable benefits have taken place in your communities after the rehabilitation of the road?
13. Would you confidently say that the quality of your lives has improved with the rehabilitation of the road?
14. What challenges if any did you experience as communities during the construction phase?
15. What are your overall impressions about the projects?

Thank you so much for your time.

Research Assistant/Consultant Details

Name_____ Signature _____ Date _____

TRADERS

Location of Meeting: **District:**

Registration of participants (age, sex, marital status, occupation)

1. How many shops are currently operational?
2. How many shops were operational before the rehabilitation of the road? (If there is a market shed in the area, probe similar questions)
3. In your view what factors have contributed to the growth (or decline) in the number of shops/traders?
4. Where do you normally get stock for your business?
5. How much time do you spend on the road when procuring your goods?
6. Has the rehabilitation of the road reduced the time spent in procuring goods?
7. How has been the inflow of traffic in the area, are there more vehicles stopping over to purchase your goods?
8. Based on your opinion, has the rehabilitation of the road favoured local or international trade?

Thank you so much for your time.

Research Assistant/Consultant Details

Name_____ Signature _____ Date _____

EDUCATION SECTOR - SCHOOLS

Name of School: Village: District:
Chiefdom: GPS Coordinates:

<table>
<tr><td>1.</td><td colspan="10">Kindly provide the statistics before commencement of road improvement works and after for the following:</td></tr>
<tr><td rowspan="3">2.</td><td colspan="2">Enrolment Rates before</td><td colspan="2">Enrolment Rates after</td><td colspan="2">Drop out rates before</td><td colspan="2">Drop out rates after</td><td>Attendance rate/week before</td><td>Attendance rate/week after</td></tr>
<tr><td>F</td><td>M</td><td>F</td><td>M</td><td>F</td><td>M</td><td>F</td><td>M</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>3.</td><td colspan="10">What do you attribute the above changes/differences in ratios to?</td></tr>
<tr><td rowspan="3">4.</td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td colspan="2">No. of teaching staff</td><td colspan="2">Pupil/Teacher Ratio</td><td colspan="2">Availability of teaching material</td></tr>
<tr><td>Before</td><td>After</td><td>Before</td><td>After</td><td>Before</td><td>After</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>5.</td><td colspan="10">What do you attribute the differences in the above rates to?</td></tr>
<tr><td rowspan="3">6.</td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td colspan="2">Teaching staff attrition rate</td><td colspan="2">Time taken to reach DEBs/PEO office</td><td colspan="2">Time taken to procure Teaching material</td></tr>
<tr><td>Before</td><td>After</td><td>Before</td><td>After</td><td>Before</td><td>After</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

Staff responsible for completing the form:

Name: Signature: Position: Date:

RESEARCH Assistant/Consultant Details

Name: Signature: Date:

TRADITIONAL LEADERSHIP FORM

Name of the Head of the Village: Village Name:
Chiefdom: District:

POPULATION CHANGE

16. What is the total population in this village?

    Male adults: Female adults: children:

17. Has there been a change in the population of the village the past 5 years?

    Yes…….. No…….

18. If yes, what do you attribute the change to?

    .....
    .....
    .....
    ……

19. With the rehabilitation of the T1 road, has there been a notable trend among your subjects to move to the roadside?

    Yes……..No…….

20. If yes, approximately how many have moved towards the roadside?

    Male.....Females.....

21. Would you estimate the age categories of those who have moved? (Probe for age cohorts).

    ……
    ……..
    ……
    ……

22. Based on your observation, has there been any change in the settlement pattern in your village? Yes……..No……

23. In your view, what attracts them to move towards the T1 road?

    .....
    ……
    ……
    ……

24. How has the road rehabilitation project benefitted your community?

    Positively…….
    Negatively…….

COMMUNITY PARTICIPATION

25. Where you involved in any community consultations prior to the commencement of the road rehabilitation works?

    3. Yes
    4. No

26. What kind of activities were you involved in during consultations?

No	Activity	Tick
6.	Identification and routing of detours	
7.	Identification and siting of borrow pits and quarries	
8.	Identification and siting of workers camps	
9.	Identification and siting of water abstraction points	
10.	Other (specify)……. ……	

27. During Construction stage, did the contractor take into account the views of the community on the above? Yes…….No……...
28. Do you think the project was undertaken within a reasonable period? Yes……No……
29. Did you have detours opened in this village? Yes……No……
30. If yes to Q14, are the detours currently being used by members of the community? Yes……No……
31. If yes, in what ways are the detours being used?

Thank you so much for your time.

Research Assistant/Consultant Details

Name: Signature: Date:

RURAL HEALTH CENTRE FORM

HIV/AIDS/ VCT CENTRE VISITS

Name of the VCT Center/RHC: Village: District:

Chiefdom: GPS Coordinates

Results Period/Month: Year:

1. Kindly provide the statistics before commencement of road improvement works and after for the following

1	No. of medical staff		Proportion of qualified medical positions filled at this HC of total establishment		Availability of medical supplies (%) of total required		Time taken to referral hospitals (specify referral point)		Attrition rate of qualified medical staff	
	Before	After	Before	After	Before	After	Before	After	Before	After
2		What do you attribute the above changes (before and after) in the above rates to?								

2. Before Commencement of T1 (Zimba – Livingstone Stretch) Rehabilitation works

Age Group	Number of people tested for HIV			Tested HIV positive			% tested positive	Remarks
	Women	Men	Total	Women	Men	Total		
15-19								
20-24								
25-29								
30-34								
35-39								
40-44								
45-49								
50+								

3. During construction of T1 (Zimba – Livingstone Stretch) Rehabilitation works

Age Group	Number of people tested for HIV			Tested HIV positive			% tested positive	Remarks
	Women	Men	Total	Women	Men	Total		
15-19								
20-24								
25-29								

30-34								
35-39								
40-44								
45-49								
50+								

4. After Construction of T1 (Zimba – Livingstone Stretch) Rehabilitation works

Age Group	Number of people tested for HIV			Tested HIV positive			% tested positive	Remarks
	Women	Men	Total	Women	Men	Total		
15-19								
20-24								
25-29								
30-34								
35-39								
40-44								
45-49								
50+								

5. Have you witnessed an increase in the incidence of fatality cases after completion /construction of T1 (Zimba – Livingstone Stretch) Rehabilitation works?

   Yes……..No……..

6. If yes, what do you attribute the RTAs to?

i) Over speeding due to the good state of the road
ii) Absence of speed humps in populated areas
iii) Other, specify……..

VCT staff responsible for completing the form:

Name: Signature: Date:

RESEARCH Assistant/Consultant Details

Name: Signature: Date:

Annex IX. Minutes of Kick-Off Meeting

FINAL EVALUATION OF THE REHABILITATION OF THE TRUNK ROAD T1 FROM ZIMBA TIO LIVINGSTONE (FED/2007/019-642)

MINUTES OF KICK-OFF MEETING HELD ON 15:30 HOURS AT EU DELEGATION ON 30TH SEPTEMBER 2013

Present:

Liso M Simbeleko, Programme Officer, EU Delegation to the Republic of Zambia and COMESA (EU Del)
James McNulty, Results Adviser, EU Del
Eleanor Phiri Ngwira, Accounting Officer, National Authorising Office (NAO)
John Murphy, Civil Engineer/Team Leader, PLANET SA
Alex MacDonald, Transport Economist, PLANET SA
Lewis Tumbama, Socio-economist, PLANET SA

Apologies:

None

Item	Description	Action
1.	**INTRODUCTION** The participants introduced themselves. The EU Del gave a background to the project by explaining that the Zimba to Livingstone road was the last link to be rehabilitated in the North-South Corridor which is a very important link in terms of trade and traffic and it follows the earlier intervention by the EU in the Monze-Zimba road, completed in 2002. The first 30km of the road from Zimba was funded wholly by GRZ and the remaining portion (km30 to km72.8) was co-financed by the EDF and GRZ. From km72.8 to the border the road was rehabilitated using JICA funds and this portion had recently been rehabilitated. There were several contracts under this programme. There was a financial and procurement audit undertaken by Moore Stephens. The construction should have commenced in 2008; however the original tender failed. A Consultant was appointed to carry out a design review of the entire section and to supervise the EDF funded portion. Both technical and financial audits were carried out and all contracts are complete with the exception of the final invoice and report to be closed by the supervising Consultant. A prepared agenda was followed (ref attached).	**All**
2.	**LINES OF COMMUNICATION** **1) EUDEL** Liso Matanga Simbeleko Email: Liso.SIMBELEKO@eeas.europa.eu **2) NAO** Temwani Chihana Email: tchihana@nao.gov.zm **3) RDA** Maketo Muyunda Email: mmuyunda@roads.gov.zm **4) PLANET SA Evaluation Team** John Murphy, Team Leader Tel: 0977 770931 Email: asco@iconnect.zm Alex MacDonald, Transport Economist Tel: 0975 282331	

	Lewis Tumbama, Socio-economist Tel: 0977 435098	**All**
3.	**LETTER OF INTRODUCTION** JM stated that a formal letter of introduction would be very useful. NAO agreed to prepare the letter. The format of the letter should be: **"TO WHOM IT MAY CONCERN** We wish to advise that the following personnel have been appointed to carry out a Final Evaluation of the EU-funded Rehabilitation of the Zimba to Livingstone Road: Mr. John Murphy, Civil Engineer, Mr. Alex Macdonald, Transport Economist and Mr. Lewis Tumbama, Socio-economist. They may visit your offices during normal working hours for purposes of interviewing some officers and collection of documents relevant to his work. You are requested to give them every assistance in the execution of their work, which will assist in the planning for future projects of this nature".	**NAO**
4.	**LIST OF STAKEHOLDERS** The principal stakeholders were listed are the EUDEL, NAO, RDA (HQs & Regional Office), Consultants and Contractors that were involved in the programme. Other stakeholders to be contacted include: - Ministry of Transport and Communications - Provincial authorities in Choma - District authorities in Kalomo, Zimba, Kazungula and Livingstone, if relevant - Zambia Revenue Authority (customs department) - Transporters (local and trans-border operators) - Bus Operators - COMESA - Ministry of Trade and Commerce - Chamber of Commerce - Ministry of Tourism - Affected communities (those up to 10km off the roadside) - Road users in general. NAO stated that they had a list of contacts for some of these organisations. JM stated that these would be requested.	**Planet**
5.	**KEY DOCUMENTS** JM stated that documents some documents had been received in advance, including the FA and addendum, Technical and Financial Audits. The documentation referred to in the agenda is available at the EU and it was agreed that temporary office space would be provided for JM and AMacD to review the documents in the coming days. The EU will also email the previous ROM reports and any other that may be convenient. The NAO stated that the EU should have the relevant documents however if anything was missing that Planet can get in touch.	**Planet**
6.	**START AND END POINTS AND DISTRICT AND PROVINCIAL AUTHORITIES** The start point of the 30km contract is 2km beyond Zimba town and is clearly demarcated. There is a marker post at the end of this contract marked '30/42.8'. This is the start of the second contract up to the water tower at chainage 72.8. The Provincial Headquarters are now based in Choma and the Districts affecting the EDF contract are Livingstone and Kazungula, however this will need to be verified.	**Planet**

7.	**ISSUES TO EXAMINE** The EU stated that the TOR should cover all aspects of the evaluation. There may be a case to reduce some of the questions that may be unnecessary. Planet stated that this will be reflected in the Inception Report. It was clarified that the TOR were prepared collectively by EU, NAO and RDA and that the report is intended principally for GRZ.	**Planet**
8.	**LOGFRAME** The logframe was modified in the addendum to the FA. It was agreed that the files would be checked for the latest version of the logframe. The logframe makes reference to indicators such as trade volumes, traffic levels and vehicle operating costs etc. The files will be checked for feasibility and baseline information to assist in the final evaluation.	**Planet**
9.	**DEBRIEFING MEETING** Planet questioned whether the draft report should be submitted 5 days before a debriefing meeting as stated in the TOR. EU stated that the date for the de-briefing meeting should be proposed in the Inception report and it is preferable that they have the report in advance. The meeting will be held in the EU and a powerpoint presentation would be welcome.	**Planet**
10.	**ANY OTHER BUSINESS** The EU urged the Consultant to liaise with James McNulty, Results Adviser, who stated that he would circulate the Country Evaluation Report later.	**Planet**

There being no further business the meeting closed at 16:15 hours. The Consultants were shown the documents available and agreed to start the document review tomorrow. It was agreed that JM would circulate brief minutes of this meeting to the EU and NAO.

FINAL EVALUATION OF THE ZIMBA TO LIVINGSTONE ROAD (FED/2007/019-642)
KICK-OFF MEETING HELD AT EU DELEGATION ON 30/09/2013 AT 15:30 HRS

AGENDA

1) Lines of Communication

2) Letter of Introduction

3) List of Stakeholders

4) Key Documents

   a. Country Support Programme and review
   b. Policy Documents
   c. Feasibility/Design/Baseline
   d. Progress Reports
   e. ROM/Mid-Term and any other evaluation
   f. Contract Documents
   g. Any Other

5) Start and end points and District and Provincial Authorities

6) Issues to Examine

7) Logframe

8) De-briefing meeting

9) Any Other Business

Annex X. Debriefing Summary

Record of Debriefing Meeting held at EC Delegation on Wednesday 23rd October 2013 at 15:30 hours

Present:
Mr. Sigvard Bjorck, Head of Section, EUD
Liso M Simbeleko, Programme Officer, EUD
Temwani Chihana, NAO Coordinator, NAO/MoF
Alex Macdonald, Transport Economist, Planet SA
Lewis Tumbama, Sociologist, Planet SA
John Murphy, Team Leader, Planet SA

1. Introduction

The attendance was limited due to the declaration of a half-day holiday in preparation for Independence Day (24th October). A prepared agenda was followed as below.

Time	Activity
15:30	Introduction of participants
15:30	Team leader presentation of summary of team findings - Relevance and Quality of Design - Effectiveness - Efficiency - Impact - Sustainability - Overall conclusion - Recommendations
15:45	Transport Economist presentation - Cost - Traffic forecasts - Overloading
15:55	Socio-economic survey findings
16.05	Plenary discussion
16:30	Final Comments and Closing of Meeting

2. Proceedings of Meeting

The Consultants presented the Draft report using a PowerPoint presentation (refer to attached slides) and discussions were held. It was agreed that the PowerPoint presentation would be appended to the report as a record of proceedings. The Team Leader stated that they would make amendments to the text following the discussions held and that the draft report should be submitted on Friday 25th October.

It was noted that there had been some formatting errors due to different software/printing platforms and it was agreed that a PDF version of the report would be submitted along with a Word version and the hard copies.

Annex XI. DAC Summary

Final Evaluation of the Rehabilitation of Trunk Road T1 Zimba to Livingstone (FED/2007/019-642)
Abstract

Subject of the Evaluation
The rehabilitation of 42.80Kms of the Trunk Road T1 from Zimba and Livingstone, situated in the Southern Province of Zambia is consistent with the NIP and CSS agenda for providing quality roads that will enhance the economic development of Zambia. Thus, the EU under the 9th EDF specifically allocated □15 million to support the co-financing of this project with (GRZ).

Evaluation Description
The final evaluation will provide the decision-makers in GRZ, the external co-operation services of the EC and the wider public with an independent assessment of performance of the programme including key lessons practical recommendation.
The methodology consisted of reviewing key documents and files, interviewing key stakeholders and visiting the project sites and carrying out structured interviews with the beneficiaries including questionnaires, focus group discussions and case studies.

Main Findings
The construction of the road was a high priority for both EU and GRZ as it comprised a small but very important link in the main North-South network. It was unfortunate that the preparation stage took a long time, particularly due to an initial failed tender, which delayed the procurement process. One of the positive aspects of this project has been the fact that GRZ raised the necessary funds through its own resources to enable the project to be completed, albeit by means of two separate contracts. Another positive aspect is the quality of the road, which is currently considered the 'best in Zambia'. There are a number of design features that should be replicated in roads throughout Zambia where feasible and there are a number of additions which we have documented for future reference. We also believe the project is a good example of being well managed at all levels.

There has been a tangible development in the City of Livingstone in the last 3 years and the construction of the road is partially responsible. The road was constructed during a time of institutional changes for GRZ, and of policy change by the EU. New policies will need to be developed to suit the new circumstances. Irrespective of these developments, it is of fundamental importance that the Road Sector is properly managed, that regular condition surveys and traffic counts are carried out, and that programming for annual workplans and budgets is carried out. It is also fundamentally important that adequate funds are set aside for road maintenance, and that the roads are protected from overloading.

Feedback
(5 lines/lignes max)

Donor: European Commission	**Region:** Zambia	**DAC sector:** 21020 – Road Transport
Evaluation type: Design, Efficiency, effectiveness, impact and sustainability	**Date of report:** October 2013	**Subject of evaluation:** Zimba to Livingstone Road
Language: English	N° vol./pages: 120	**Author:** John Murphy
Programme and budget line concerned:		

Type of evaluation: ( ) ex ante ( ) intermediate / (x) ex post	
Timing: **Start date:** 30/09/2013 Completion date:	
Contact person:	**Authors:**
Cost: Euro	**Steering group**: Yes/No