NATIONAL CONSTRUCTION COUNCIL (NCC)

Baraza la Taifa la Ujenzi

REPORT

REVIEW OF TECHNICAL AUDITS REPORTS ON ROAD PROJECTS FINANCED BY ROADS FUND BOARD

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ACRONYMS

AO	Accounting Officer
BOQ	Bills of Quantities
CAP	Chapter
CESMM	Civil Engineering Standard Methods of Measurements
DROMAS	District Roads Management System
EC	Evaluation Committee
EMP	Environmental Management Plan
FY	Financial Year
GCC	General Conditions of Contract
GN	Government Notice
HDM4	Highway Development and Maintenance
HIV	Human Immunodeficiency Virus
IAs	Implementing Agencies
LGA	Local Government Authority
NCC	National Construction Council
PCB	Prevention of Corruption Bureau
PCCB	Prevention and Combating Corruption Bureau
PMU	Procurement Management Unit
PPRA	Public Procurement Regulatory Authority
RFB	Roads Fund Board
RMMS	Road Management and Maintenance System
SCC	special Conditions of Contract
TANROADS	Tanzania National Roads Agency
TARURA	Tanzania Rural and Urban Roads Agency
TB	Tender Board
VfM	Value for Money

Executive Summary

The National Construction Council (NCC) is the Government institution established by Act of Parliament No. 20 of 1979 (*National Construction Council Act CAP 162 Revised Edition 2008*). The mission of the Council is to promote and provide strategic leadership for the development of the construction industry in Tanzania. The mission is implemented through the execution of 15 functions embodied in the NCC Act. Among the functions of the council are "to promote and provide strategic leadership for the growth, development and expansion of the construction industry in Tanzania with emphasis on the development of the local capacity for socio-economic development and competitiveness in the changing global environment; to advise the government on all matters relating to the development of the construction industry and to formulate proposals and recommendations for their implementation as well as to provide advisory services and technical assistance to construction industry stakeholders on all matters related to the construction industry". In connection to that, NCC has also a mandate to promote quality management including provision of technical audit services in the construction industry.

The National Construction Council (NCC) provides advisory services to various stakeholders of the construction industry in areas of project planning; procurement and contract administration of construction works and consultancy services; project cost management; value for money auditing; Contract Management and Construction Claims Management.

In line with the above functions and services, NCC has carried out a study on technical audits commissioned by the Roads Fund Board (RFB) conducted by National Construction Council (NCC) from Financial Year 2012/13 to 2017/18 to learn pertinent issues recurring and improvement realised over years.

The following are the key findings and recommendations as observed in the study;

Key Findings

a) Despite improvement in project implementation, there are persistent audit issues from each implementing agencies. The observed persistent shortcomings are:
   i) not using maintenance software (DROMAS for LGAs/TARURA) during project planning stage;
   ii) inadequate plans and designs;
   iii) lack of general understanding of preparation of tender/contract documents;
   iv) inadequate application or use of the CESMM during preparation of Bill items;
   v) lack of skills in preparation of comprehensive technical (e.g., evaluation) reports;

vi) lack of awareness on the requirement of the current Public Procurement Act (PPA) and its Regulations;
vii) weaknesses in contract administration
viii) weakness in supervision of works;
ix) lack of proper quality assurance program during project implementation; and
x) absence of animal paths/corridors.

b) On potential areas for improvement towards satisfactory project execution, the study has revealed the following areas to be addressed;
i) Tools for efficient project planning (*software*) for TARURA
ii) Preparation of correct, comprehensive and optimized project designs
iii) Preparation of Tender and contract documents
iv) Road condition survey/inventory skills and report preparation
v) Preparation of specifications for works implemented by TARURA
vi) Comprehensive understanding of Public Procurement Act (PPA) and its Regulations
vii) Awareness on the procurement procedural forms prepared by the PPRA
viii) Awareness on the available useful guidelines on how to prepare different procurement reports and
ix) Contract Management and Administration

c) The study has revealed that, the current VfM tool, developed by RFB, could be improved by adding a checklist of details which need to be audited in Engineer's Estimates, protection of the environment, termination of contract and quality of executed works.

d) The study has revealed that, for proper project implementation there is a need for redesigning Technical Audit so that it is done continuously along the project implementation arrangement.

Recommendations

The following are recommendations from the study:

a) Comprehensive planning of project should be given a priority. Adequate resources should be set aside to ensure that projects are comprehensively planned. The comprehensively prepared plans will form baseline against which designs, procurement, construction and contract management will be implemented, monitored and controlled. Comprehensive planning should encompass risk management plans.

b) In order to Improve performance of the implementing agencies, and achieve value for money in projects the following are important;

   i) Ensure that all necessary knowledge, skills, experiences, systems and tools for comprehensive project implementation are in place and are appropriately used;
   ii) Avoid standardized procurement procedures, instead employ procurement approaches that are corresponding to the project nature, size, complexity and risks. In each aspect of procurement (qualification requirements, delivery method, procurement method, contract strategy, tender document, evaluation, negotiation, contract documents) should be based on best practices in procurement of public works;
   iii) Ensure comprehensive Technical Specifications for maintenance of rural and urban roads are developed (*low volume roads*);
   iv) Sustainable capacity building programme of staff involved in implementation of projects through formal training, on-job training, mentorship, and other effective capacity building forms;
   v) Deliberate effort should be made to ensure full implementation of Technical Audit recommendations given in previous years;
   vi) Enhanced organizational project management arrangements (investments in training, practices, systems, time, tools, techniques, etc);
   vii) Improved consideration of Health and Safety aspects throughout the project lifecycle;
   viii) Enhance contract management and administration practices; and
   ix) Provide animal paths/corridors to avoid animals using the carriageway.

c) For improved project performance, technical audit is supposed to be proactively done in each stage of the project. This could be achieve by establishment of a Technical Audit Unit, adequately skilled and knowledgeable to review projects. This Unit will be responsible to review the projects at each key stages to ensure that any shortcomings in that stage are corrected before the next stage is implemented. For example, before procurement is initiated, all design documents should be reviewed to ensure that the design is complete with all important details and is accurate. Alternatively, consultants should be appointed at initial stages of the projects to implement technical audit in stages throughout the project life cycle.

CHAPTER ONE

1.0 Introduction

1.1 Background

The National Construction Council (NCC) is the Government institution established by Act of Parliament No. 20 of 1979 (*National Construction Council Act CAP 162 Revised Edition 2008*). The mission of the Council is to promote and provide strategic leadership for the development of the construction industry in Tanzania. The mission is implemented through the execution of 15 functions embodied in the NCC Act. Among the functions of the Council are "to promote and provide strategic leadership for the growth, development and expansion of the construction industry in Tanzania with emphasis on the development of the local capacity for socio-economic development and competitiveness in the changing global environment; to advise the government on all matters relating to the development of the construction industry and to formulate proposals and recommendations for their implementation as well as to provide advisory services and technical assistance to construction industry stakeholders on all matters related to the construction industry". In connection to that, NCC has also a mandate to promote quality management including provision of technical audit services in the construction industry.

The National Construction Council (NCC) provides advisory services to various stakeholders of the construction industry in areas of; project planning; procurement and contract administration of construction works and consultancy services; project cost management; value for money auditing; Contract Management and Construction Claims Management.

In line with the above functions and services, NCC has carried out a study to review the findings from technical audits commissioned by the Roads Fund Board (RFB). These Audits were conducted by National Construction Council (NCC) from Financial Year 2012/13 to 2017/18.

1.2 Objectives

1.2.1 Main Objective

The main objective of the review study was to identify any improvement trends and persistence in shortcomings for the purpose of advising the Government and other construction industry stakeholders accordingly.

1.2.2 Specific Objectives

The following were the specific objectives of the study:

i) To identify key audit findings at each stage of the project life cycle;
ii) To study the trend of improvement in the performance of IAs and establish the possible cause of the improvement;
iii) To identify persistent shortcomings and establish the primary source/cause of the problem
iv) To identify potential areas for improvements and give recommendations
v) To identify any improvements to the current Technical Audit practices (tools, systems, and timing)

1.2.3 Scope of the Study

This study of technical audits conducted by National Construction Council (NCC) was done through reviewing technical audit reports prepared by NCC for the past six Financial Years. (i.e. *2012/13 to 2017/18*). Moreover, other sources of information including standard tender documents prepared by the Public Procurement Regulatory Authority (PPRA), literature on best practices and public procurement legislations (i.e. Public Procurement Act, 2011 and Public Procurement Regulations, 2013) were reviewed.

1.3 Deliverables

The report presents the findings of this review study along the objectives discussed in Section 1.2 above. Specifically the report is comprised of the following study results:

i) Notable Audit findings for each phase of the project life cycle;
ii) Improvement trends on performance of IAs and establishment of possible causes thereof;
iii) Persistent shortcomings and their primary source/cause;
iv) Recommendation on potential areas of project performance improvements;
v) Proposal for areas of improvement on the VfM tool; and
vi) Proposal on the adequacy of the current technical audit practice.

1.4 Methodology

This study is a documentary review study, its approach was therefore to comprehensively review Technical Audit reports covering the period from 2012 to 2018. The reports covered a total of 901 projects which were audited during that period. During this review care was taken to ensure that, all necessary data

collected from the audit reports was properly categorized and adequately analyzed. **Table 1.1** shows the number of audited projects in respective Financial Years.

Table 1.1: **Number of Projects Audited**

S/No.	Financial Year (FY)	Number of Projects Audited
1	2012/13	192
2	2013/14	93
3	2014/15	76
4	2015/16	149
5	2016/17	221
6	2017/18	170
Total		**901**

1.5 Report Structure

This report is made up of four chapters; *Chapter One* introduces the genesis of the study, the approach and identifies the major output of the study. *Chapter Two* presents data collection methodology adopted in carrying out the study; it discusses the data collection tool and the data processing and analysis. *Chapter There* presents results and discussion linking these to the objective of the assignment. Conclusions and Recommendations are given in *Chapter Four* of the study.

CHAPTER TWO

2.0 Methodology

The main objective of this study is to establish notable performance improvement trends and persistence of shortcomings identified from Technical Audit assignments commissioned by Roads Fund Board. The main source of data for this study was technical audit findings. In order, therefore, to attain the objectives of the study, the team carried out a comprehensive review of technical audit reports of the audits carried out by NCC. A data capturing tool was then prepared for the purpose of capturing the required data. Data collected from documentary review were analyzed in response to the set objectives.

2.1 Desk Study

In carrying out the desk study, the team reviewed technical audit reports of the projects audited between 2012 and 2018. In this period, it was observed that, a total of 901 Road projects were audited. To supplement the information obtained from these audits, the team also studied a general literature relating to construction project management, construction management and construction contract administration and management.

2.2 Establishment of a Tool for Data Collection

In order to ensure that, all necessary data is collected for the study, the study team established an excel spread sheet for data collection. The tool was based on Microsoft Excel Programme.

2.3 Data Extraction/Collection

Data from the audit reports in line with the objectives of the study were extracted In order to establish trends of the two main implementing agencies, information regarding Tanzania National Roads Agency (TANROADS) was separated from those regarding Local Government Authorities (LGAs). The data collected were reflecting the audit findings on the five key stages of project life cycle (i.e. *planning, design and tender documentation; procurement stage; construction stage; project completion and closure as well as quality of executed works)*. In making sure that, the objectives are well discussed, the collected data was categorized into persistent shortcomings, recurring shortcomings and improved performance. Further analysis

was done to determine audit findings with peculiar occurrence and those which are newly occurring.

2.4 Analysis of the Extracted Data

The data collection matrix developed using excel spreadsheet was used to analyze collected data. Generally, the study analysis focused on:

a) Identification and categorization of key findings;
b) Performance improvement trends and associated reasons;
c) Identification of persistent shortcomings and establishment of the primary source/cause of the problem;
d) Recommendations of potential areas of improvements;
e) Review of the VfM tool against the best industry practices; and
f) Proposition of improvement to the current Technical Audit practices.

CHAPTER THREE

3.0 Study Results and Discussion

Results presented in this chapter are based on information obtained from technical audit reports done on projects audited between years 2012 and 2018. The chapter describes how the collected data were processed and analysed to give the study results thereof.

3.1 Identification and Categorization of Key Findings

Based on the key stages of the project life cycle, the key findings were identified and categorized. The key stages in the project life cycle used in this study are planning, design and tender documentation stage, procurement stage, construction stage, project completion and closure stage and quality of executed works stage. The identified key findings as categorized based on project life cycle stage are discussed below.

1st Stage: Planning, design and Tender Documentation

In this stage the study grouped the key findings as follows;

Planning

a) **Lack of Use of Maintenance software** (such as HDM4, DROMAS or RMMS): It is a requirement that, Implementing Agencies (IAs) use maintenance software during planning process, as well as during managing roads maintenance interventions. This study revealed that, in most IAs particularly, LGAs the software i.e. DROMAS was not utilized. The main reason given for not using the software was that by the time the software was introduced to IAs it had only the management part while planning part was still under development.

b) **Lack of Engineer's Estimates**: In some Implementing Agencies the study revealed that estimates for works by Engineers were either not prepared at all for were inadequately prepared. Those that were inadequately prepared mostly lack substantiated justification for quantities and adopted rates.

Design

In this part, the study revealed that, there are some deficiencies during project preparation. The deficiencies commonly identified include:

a) missing Design Calculations for example in Bridge/box culverts.
b) projects contract documents lacked Technical Drawings and Strip Maps; and
c) Missing road condition survey/inventory reports.

Tender Documentation

a) Incomplete Specifications

The study established that, there are some audited projects whose contract documents contained incomplete specifications. It is the requirement of contract documents that, each contract should be complete and in particular, comprehensive specifications must be included for proper execution, as well as inspection and acceptance of work.

- Specifications not covering the aspect of inspection and acceptance criteria (*Quality Control*) of different elements of work

b) Use of Standard Documents and Customization of Tender Documents

It is the requirement of public procurement legislation that, each IA should use standard tender documents issued by PPRA. These standard documents contain areas which need customization to reflect the peculiarity and performance requirements of each project. The study has revealed that, most IAs recorded shortcoming of using incomplete tender documents which were in most cases not correctly prepared and the main shortcoming being associated with poor customization of Special Conditions of Contract.

c) Weaknesses in prepared BoQ: The reviewed audit reports show that project BoQ from some implementing agencies were found to have weaknesses as follows:

- Preliminaries missing an item in compliance with measures to minimize the risk of transfer of HIV;
- missing insurance items while the same are indicated as applicable in the Special Conditions of Contract (SCC);
- Missing Reference to Specifications in the Bills of Quantities column;
- Inadequate description of Bill items, as compared to Civil Engineering Standard Methods of Measurements (CESMM) to the extent that they could have more than one interpretation;

d) **Mismatch between BoQ, Drawings and Specifications**: In the reviewed audit reports, the team observed that, there are inconsistencies between descriptions given in Bill of Quantities, details shown on drawings and specifications of work items.

2nd Stage: **Procurement**

For the purpose of this study, the procurement stage was divided into two parts namely compliance with procurement law and evaluation of tender and award contract.

Compliance with procurement law

a) **Procurement Method**: It is the requirement of the Procurement Act that, every procurement should be implemented using appropriate procurement method. In this study, it was revealed that, in some projects, procurement was done using inappropriate method for example use of competitive quotation while the tenders exceeded the limit amount provided for quotation.

b) **Tender Process**: In this case, it was observed that tenderers were given short time to submit tenders contrary to the stipulated tender processing times in the Public Procurement Act and its Regulations.

c) **Tender Boards (TB) Approvals**: In some IAs, tender adverts and tender documents were not approved by their respective Tender Boards. Similarly, there were findings indicating that contract documents were not approved contrary to section 33(1) (c) which requires Tender Board (TB) to approve tendering and contract document and section 38(k) which requires PMU to issue approved contracts.

Evaluation of Tender and Award of Contract

a) **Improper Evaluation of Tenders**: In some IAs, it was observed that, members of evaluation committees were using criteria not stipulated in the Tender Dossier/Request for Proposal.

b) **Tender Evaluation Reports missing some attachments**: Evaluation reports prepared by the Evaluation Committees in some of the IAs were not comprehensive enough. Some were noted to lacking such information as copies of adverts, letters of appointment of Evaluation Committee members and minutes of tender opening.

c) **Wrong Communication of Confirmation of Arithmetic Errors:** Reports reviewed showed that, in some IAs communication of confirmation of

arithmetic errors were done by the evaluation team instead of Accounting Officer (AO).

d) **Incomplete Notification of Intention to Award:** Reports reviewed showed that notifications of intention to award contracts were missing some of the required information. For example; there were notifications which missed completion or delivery period of the project, reasons for not being successful or notifying successful or unsuccessful bidders as per requirements under Reg. 231 (4) of GN 446 of 2013 as amended in 2016;

e) **Awards Made Beyond Bid Validity Periods**: Reports reviewed showed that, in some of the IAs Tenders were awarded beyond bid validity period. Literary these tenders had already expired at the time of award.

3rd Stage: **Construction**

a) Timeliness of Site Possession

In most projects, no site possession records were availed. Where these were made available, it was learnt that in some projects Site Possessions were delayed beyond dates indicated in the contracts.

b) Quality of project Programme (*Schedule of Work*)

Reports reviewed showed that, revised programme of works were either incomplete or not submitted on time. While, for those submitted it was learnt that most were not detailed enough to show sub activities or critical activities.

c) Adherence to Project Programme

It was observed that, implementation of most of projects was not progressing in accordance to the submitted project programme of works. This could be a problem of delay in updating the programme of works or weaknesses in project management and contract administration.

d) Quality of Environmental Management Plan (EMP)

Reports reviewed showed that, there were many projects that had no Environmental Management Plans (EMP). This is contrary to the requirements of contract document. Contract documents require that the contractor should prepare an EMP.

e) Management of Contractual Documents, Including Surety And Insurances Bonds

Reports reviewed showed that, management of sureties and insurances was inadequate. In some projects the amounts of securities and insurances accepted were less than the provisions in contract documents. In some projects it was observed that other securities and insurances were not submitted at all though the contract documents required their submission.

f) General Correspondence

Reports reviewed showed that, in most of project implemented, correspondences were not adequately kept. It was observed that some project files were not complete. They lacked information from some key stages of the project cycle. Records are supposed to be sequentially filed include information from all phases of the project life cycle (i.e. records from planning, design, tendering and contract implementation to project completion and closure).

g) Site instructions

There was clear indication that most Site Instructions were not properly given. In most cases these were given orally contrary to the requirements of the forms of contracts.

h) Minutes of site meetings

In most projects there were no proper records of confirmed site management meetings. Most of the records availed showed that were not confirmed as they lacked signatures of the parties.

i) Progress reports

For some projects no evidences to show that projects progress reports are prepared and used as tool for project management and contract administration. For a few projects which had Progress reports, these were judged not to be comprehensive. They lacked important information such as financial progress; physical progress; personnel deployment and equipment mobilized.

j) Works measurement and inspection records

In some of the projects, it was difficult to confirm whether valuation was based on measurement of works done. In such projects, Valuation and payment of Interim Certificate were being only based on BoQs. For those prepared, the Measurement sheets were not detailed enough to enable reference to be made to the corresponding BoQs items. Similarly, no details were provided concerning the road chainage measured.

k) Material testing records

It is a requirement of contract documents that, material test to be conducted by authorized laboratories and reports approved. This study has revealed that, for most projects there were no test results reports availed to the audit team.

l) Interim and final payment certificates

There were delays in paying certified Certificates. It was further noted that retention monies were being deducted beyond the limits provided in the contracts.

m) Assessment (including validity) of variations

In some projects with variations, there were weaknesses in assessment and management of Variation orders particularly in the following aspects:

1. Procedures were not properly followed in ordering variations particularly the requirement to seek the approvals of respective Tender Boards was not being adhered to.
2. Valuation of variations: Projects Managers not seeking necessary approvals from the respective Tender Boards for those items with quantities and costs requires approvals in accordance with the provisions in contracts (*changes in quantities*)

n) Assessment (including validity) of project delays and extensions of time

Reports reviewed showed that, in some delayed projects, there were no evidences showing if extension of time was granted. Similarly no evidences were provided to indicate that liquidated damages Clauses were being invoked for projects were delayed. It was further noted that there were multiple delays in responding to contractor's requests for extension of time and completion certificates.

4th Stage: Project Completion and Closure

a) **As-built drawings:** There were no as-built drawings prepared for some of the completed projects. Furthermore, in some projects preparation and submission of As-built drawings were made not applicable in contract documents.

b) **Snag list:** It is a requirement of contract that after the practical completion of projects, there should be conducted a joint site inspection whereby identified snags (if any) are to be compiled and contractually communicated. However, the study has revealed that, in most of the completed projects snag lists were not prepared even in projects that are clearly observed to have defects.

c) **Issuance of certificates:** In all completed projects, there were delays in issuance of certificates of completion and defects liability certificates. In some of audited projects. There were cases where the client did not take over the sites after the issuance of completion certificates as required by respective contracts.

d) **Project reports:** There were no final project reports prepared for completed projects. This is not a contractual requirement; nevertheless it is a good practice that, Project Managers should prepare a final project report for future references.

e) **Management of Defect Liability Period:** The study revealed that, the duration for defect liability period was not correctly applied. Some completed projects were provided with only 90 days defects liability period instead of the 180 days provided in the respective contract documents.

5th Quality of Executed Works

a) **Road Signs:** In some projects there it was evident that designs and planning missed out road signs in the whole stretches of the roads.

b) **Existence of potholes and ruts:** in some of the road projects potholes and ruts were observed to be a problem.

c) **Road camber inadequately formed**. Reviewed audit reports show that in some of projects the road cambers were found to be not properly formed as per project drawings and specifications.

d) **Gravel Material Issues:** Reviewed audit reports show that gravel layers were found to be wearing out in most of the road stretches due to inadequate compaction. Moreover, in other projects the gravel material applied were inadequate in terms of gravel layer thickness compared to the drawings and specifications.

e) **Drains (mitre, catch water and road side) issues:** Reviewed audit reports show that drawings for drains were in most cases not specified in contracts and therefore inadequately made (*shaped*).

f) **Quality of materials:** Reviewed audit reports revealed that there was generally non adherence to specified quality of materials for use in concrete works. For example in some projects, the sizes of aggregates were found to be larger than the size provided in the specifications.

g) **Site Cleanliness:** Reviewed audit reports indicated that in some of completed projects the sites were not properly cleaned.

h) **Safety at Site:** There were records of Non compliance with safety issues as evidenced by lack of use of safety gears such as dust masks, gloves and boots by the workmen to some projects.

i) **Workmanship:** In some projects there were problem in quality of workmanship, for example culverts and bridges were observed to have untreated honey combs as well as minor cracks.

j) **Inadequate Design and Supervision:** As a result of this, projects are not being implemented to achieve the expected qualities and standards as per contract. For example, in some projects there were constructions of culverts without provision of cut off walls.

k) **Inadequate planning:** In most projects there were lack of harmonization between authorities managing utilities and roads authorities to ensure that, during road construction all other services (water, electricity, telecommunication etc) are taken care off.

l) **Absence of animal paths/corridors:** Reviewed audit reports show that there are damages caused by animals' encroachment to roads especially gravel roads and structures.

3.2 Performance Improvement Trend and Possible Causes

In Section 3.1 above, findings were discussed based on the five stages of project life cycle (i.e. *Planning, Design and Tender Documentation Stage, Procurement Stage, Construction Stage, Project Completion and Closure Stage as well as Quality of Executed Works Stage*). This section uses value for money criteria for each project stage, to learn any improvements recorded on project implementation. In order to identify the improvement made, shortcomings in the six audited financial years (*i.e. 2012/13, 2013/14, 2014/15, 2015/16, 2016/17 and 2017/18*) were compared.

In this study, the following working definitions were used:

a) Persistent shortcomings: shortcomings noted to occur in each year during the six years period;
b) Recurring shortcomings: these are shortcomings which were noted in the initial years (i.e. 2012/12 and 2013/14) they then disappeared and were observed again in recent years (i.e. 206/17 and/or 2017/18).
c) Improvements: these refer to aspects which were observed as shortcomings in the early years (i.e. 2012/13 and/or 2013/14) then they completely disappeared.

Further, there were findings which showed a different scenario, that it never occurred in the first four or five audited financial years and occurs once and disappeared in that very year. These were termed as findings with peculiar occurrence. Alongside the findings which were defined as showing peculiar occurrence, there was finding which was termed as newly occurring findings as it has never appeared in the first four audited financial years and appeared in the both last two years or the final year..

Lastly, the working definition had also a phenomenon whereby under the set assessment criteria, there were no issues for all the six audited financial years in some criteria out of all the set criteria. These were termed as none. For more details see **Appendix I.**

The focus of this section is to identify any performance improvement trends as judged by the observed shortcomings in the six years. Because the audited projects were both implemented by TANROADS or LGA (and later on TARURA), it was decided that the evaluation be grouped to reflect the improvement made by each of these agencies. . Further, in order to identify which stage of the project life cycle

recorded which trend the evaluation and associated discussion was grouped under each stage of the project life cycle. The summary of the findings of this exercise are presented in Tables 3.1 as well as Figures 3.1(a) and 3.1(b) below.

Table 3.1(a) Performance Improvement Trend for TANROADS and LGAs/TARURA

TANROADS		**LGAs/TARURA**	
Category of Finding	**Occurrence**	**Category of Finding**	**Occurrence**
Persistent	38%	Persistent	68%
Re curing	30%	Re curing	16%
Improved	20%	Improved	9%
Peculiar Occurrence	10%	Peculiar Occurrence	5%
Newly Occurring Finding	3%	Newly Occurring Finding	2%
Total	**100%**	**Total**	**100%**

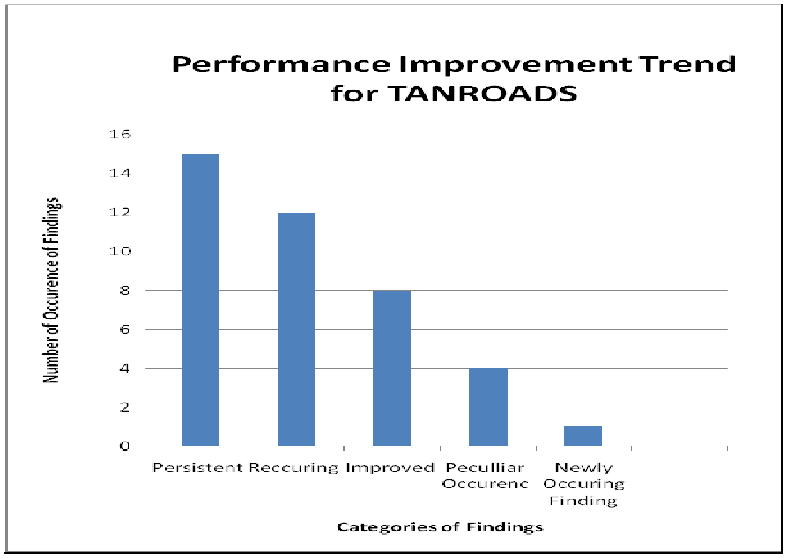

Figure3.1(a) Performance Improvement Trend for TANROADS

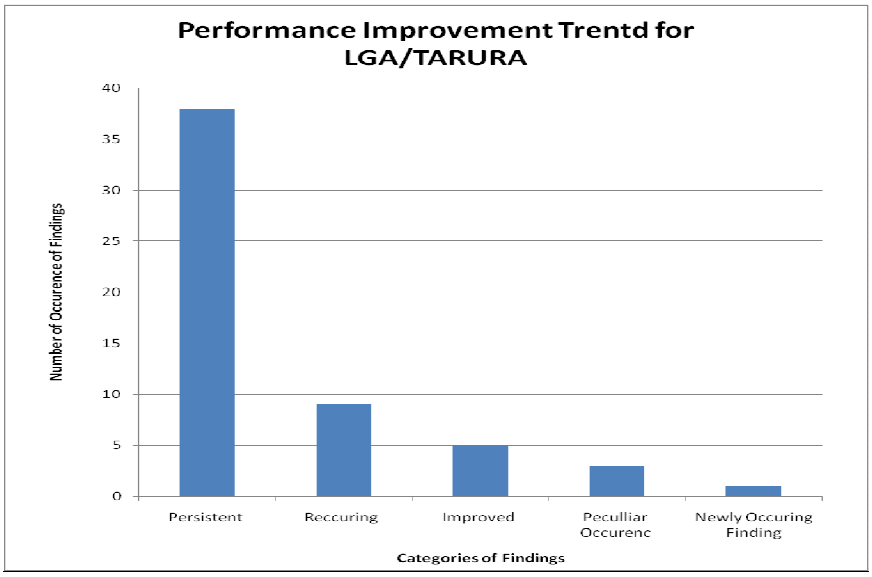

Figure 3.2.1(b): Performance Improvement Trend for LGAs/TARURA

Table 3.1(a) and Figure 3.1(a) above present TANROADS performance, the analysis shows that out of 40 observed findings for TANROADS, 15 findings equivalent to 38% were found to be persistent. While 12 findings equivalent to 30% were found to be recurring. TANROADS has shown to have improved on 8 findings which are equivalent to 20% of all 40 observed findings. Further, the analysis for TANROADS has shown to have 4 findings out of the 40 observed findings equivalent to 10% with peculiar occurrence. Lastly, there was only 1 finding that qualified to be termed as newly occurring finding.

From Table 3.1(b) and Figure 3.1(b) above for LGAs/TARURA, the analysis shows that out of 56 observed findings, 38 findings equivalent to 68% were found to be persistent. 9 findings equivalent to 16% were found to be recurring. LGAs/TARURA has shown to have improved on 5 findings which are equivalent to 9%. Likewise, the analysis for LGAs/TARURA has shown to have 3 findings out of the 56 observed findings which is equivalent to 5% with peculiar occurrence. Lastly, there was 1 only finding that was termed as newly occurring finding.

Improved areas for TANROADS

Based on the criteria set in the Value for Money (VfM) tool, the study has revealed that, TANROADS has shown to have improved in various areas as presented in Table 3.2 below.

Table 3.2: Areas which showed Improvement for TANROADS

S/N.	Improved Area	Possible Driver of Improvement/Remarks
1	Procurement Method	a) Improvements in the general understanding of PPA and its Regulations b) Knowledge and skills gained through trainings and other capacity building arrangements. Implementation of previous Technical Audit recommendations
2	Evaluation process and award of tenders	
3	Works measurement and Inspection Records	a) Implementation of previous Technical Audit recommendations b) Knowledge and skills gained through trainings and other capacity building arrangements.
	Material Testing Records	
	Contract Finishing – preparation of as built drawing	
4	Road formation	a) Implementation of previous Technical Audit recommendations b) Knowledge and skills gained through trainings and other capacity building arrangements. c) Enhanced supervision capabilities
5	Quality of gravel materials	a) Implementation of previous Technical Audit recommendations b) Enhanced capabilities in selecting and blending road construction materials c) Enhanced supervision capabilities
6	Compliance with Health and Safety issues	a) Implementation of previous Technical Audit recommendations b) Enhanced supervision capabilities c) Improved awareness on Health and Safety Issues through training and other capacity building arrangements.

Improved areas for LGA/TARURA

Based on the criteria set in the Value for Money (VfM) tool, the study has revealed that, **LGA/TARURA** has shown to have improved in various areas as summarized in **Table 3.3** below.

Table 3.3: Areas which showed Improvement for TANROADS

S/N.	Improved Area	Possible Driver of Improvement/Remarks
1	Procurement Method	a) Improvements in the general understanding of PPA and its Regulations b) Knowledge and skills gained through trainings and other capacity building arrangements. Implementation of previous Technical Audit recommendations
2	Tender Process, Evaluation process and award of tenders	
3	Assessment of variations	a) Implementation of previous Technical Audit recommendations b) Knowledge and skills gained through trainings and other capacity building arrangements.
4	Adherence to contract drawings during project implementation	a) Implementation of previous Technical Audit recommendations b) Knowledge and skills gained through trainings and other capacity building arrangements. c) Enhanced supervision capabilities

3.3 Identification of Persistent Shortcomings and Establishment of the Primary Source/Cause of the Problem

One of the specific objectives of this study is to identify persistent shortcomings and establish their primary or possible causes. In this study, the team observed that both agencies (*TANROADS and LGA/TARURA*) had some persistent shortcomings which were recorded in almost all six studied financial years.

Based on **Section 3.2** above, TANROADS projects were affected by at least 15 persistent shortcomings, while LGAs/TARURA projects recorded 38 persistent shortcomings. **Table 3.4** below gives a detailed presentation of the persistent shortcomings for both TANROADS and LGAs/TARURA.

Table 3.4: Persistent shortcomings and their primary source/cause of the problem

S/N.	Persistent shortcomings	Primary Source/Cause	TAN-ROADS	LGA/ TARURA
	Planning, Design and Tender Documentation			
1	Maintenance software (such as DROMAS) in the planning process and managing roads maintenance interventions were not being used.	a) Lack of knowledge and skills to use the DROMAS b) Software is not installed or its installation is incomplete c) Lack of data required to use the software d) Negligence	**X**	√
2	Incomplete/inaccurate Tender Document due to improper/inappropriate customization, for example a) In preliminaries, BoQs not including an item for compliance with measures to minimize the risk of transfer of HIV; b) Not providing a BoQs item corresponding to insurances; c) Bill of Quantities descriptions not adequately defining the intended work item and are not supplemented with Drawing or Specifications. d) Missing Specifications Reference in the Bills of Quantities column.	a) Lack of general understanding in customization of tender documents making sure that there is a link between items provided in the Bills of Quantities and items in the general and special conditions of contract b) Poor coordination between User Department and the Procurement Management Unit in the sense that, there are inputs which are to come from the User Department. User Department are better placed to make sure all technical inputs (*Specifications, Drawings and Bills of Quantities*) are taken on board in preparation of complete and comprehensive tender document. c) Weakness in Tender Board approvals d) Negligence	√	√
S/N.	**Persistent shortcomings**	**Primary Source/Cause**	**TAN-ROADS**	**LGA/ TARURA**

4	Road condition survey/inventory reports are not prepared.	a) Negligence b) Lack of knowledge and skills to carry out condition survey and prepare reports c) Lack of funds to carry out Condition Surveys	**X**	√
5	Incomplete Specifications Specifications not covering the aspect of inspections and acceptance criteria (*Quality Control*). This is also not provided for in the Bill of Quantities.	a) Negligence b) Lack of knowledge and skills to prepare adequate specifications Lack of National Standard Technical specifications for low volume roads (rural and urban roads)	**X**	√
	Procurement			
6	Standard Contract Documents are used; however there were shortcomings in filling the forms of contracts and or customization of SCC.	a) Lack of skills and knowledge to prepare comprehensive contract documents; b) lack of skills and knowledge in Tender Board to comprehensively review documents before approval c) Poor coordination between User Department and the Procurement Management Unit in the sense that, there are inputs which are to come from the User Department. User Department are better placed to make sure all the technical inputs (*Special Conditions of Contract*) are taken on board in preparation of complete and comprehensive tender document.	√	√
S/N.	**Persistent shortcomings**	**Primary Source/Cause**	**TAN-ROADS**	**LGA/ TARURA**

8	Tender evaluation reports were not comprehensive lacking such information as copies of advert, letters of appointment of EC members and or minutes of tender opening.	It can either be lack of skills in preparation of comprehensive technical reports or tendency of just ignoring things as business as usual.	√	√
9.	Communication of confirmation of arithmetic errors to bidders done by the evaluation committee instead of the Accounting Officer (AO).	Lack of awareness on the procedure for communicating arithmetic errors during tender evaluation exercise as stipulated in the Public Procurement Act.	**X**	√
10.	Notifications of intention to award contracts are not well prepared. The following crucial information were missing; completion or delivery period , reasons for not being successful or notifying successful or unsuccessful bidders as per requirements under Reg. 231 (4) of GN 446 of 2013 as amended in 2016.	Lack of comprehensive understanding of the requirements of Public Procurement Legislation. Lack of awareness on the requirements of Reg. 231 (4) of GN 446 of 2013 as amended in 2016.	**X**	√
11.	Using Contract documents without approval of Tender Board (TB) contrary to section 33(1) (c) which requires TB to approve tendering and contract document and section 38(k) which requires PMU to issue approved contracts.	Lack of comprehensive understanding of the requirements of Public Procurement Legislation. (Lack of awareness on the requirements of section 33(1) (c) of PPA of 2011).	**X**	√
S/N.	**Persistent shortcomings**	**Primary Source/Cause**	**TAN-ROADS**	**LGA/ TARURA**

	Construction			
12.	Site Possession weaknesses i) No site possession records were availed to ascertain if there was proper site possession ii) Site Possessions were delayed contrary to the requirements of contracts.	a) Lack of knowledge on the importance of appropriate site handover practices. b) Weakness in contract management and administration practices c) Lack of standardized procedures in giving possession of site to the Contractor.	√	√
13	Revised programs of works were either incomplete or not submitted or were submitted late. And for those submitted were not detailed enough to show sub activities.	a) Lack of knowledge and skills of preparing and updating comprehensive project programme b) Negligence c) Weakness in contract management and administration by Project Managers	√	√
14.	Project programs were not adhered to as a result there were delays in completion of the projects.	Weakness in Project Management particularly in time management aspects	√	√
15.	There was no quality assurance Plan prepared. The technical specifications and routine site inspections were being considered as the quality assurance programmes	a) Lack of knowledge and skills of preparing and implementing a credible quality assurance plan b) Negligence c) Weakness in contract management and administration by Project Managers	√	√
S/N.	**Persistent shortcomings**	**Primary Source/Cause**	**TAN-ROADS**	**LGA/ TARURA**

17.	The management of sureties and insurances was inadequate. In some projects, performance securities and insurances were wrongly made not applicable in contract documents. In some projects the amounts of securities and insurances accepted were inadequate compared with the provisions in the contract documents. Furthermore, securities and insurances were not submitted at all though the contract documents required their submission	a) Lack of comprehensive knowledge and experience in comprehensive/best practices in contract management and administration b) Negligence c) Lack of contract management and administration Manual or Guideline	√	√
18.	Weaknesses in filing system, delays in acknowledging and responding to received letters.	a) Lack of comprehensive knowledge and experience in comprehensive/best practices in contract management and administration b) Negligence c) Lack of contract management and administration Manual or Guideline	**X**	√
19.	There were no any written site instructions when it was needed, others were inadequately written.	a) Lack of comprehensive knowledge and experience in comprehensive/best practices in contract management and administration b) Negligence c) Lack of contract management and administration Manual or Guideline	**X**	√
S/N.	**Persistent shortcomings**	**Primary Source/Cause**	**TAN-ROADS**	**LGA/ TARURA**

21.	For some projects there were no projects progress reports and in other projects Progress reports were not comprehensive as they were lacking such information as financial progress; physical progress; personnel deployment progress:	a) Lack of comprehensive knowledge and experience in comprehensive/best practices in contract management and administration b) Negligence c) Lack of contract management and administration Manual or Guideline	√	√
22.	In most projects works measurements were not prepared as payments were being done as per BOQs. For those prepared, the Measurement sheets were not detailed enough to show BoQs pay item referred to and no details of the chainages of the items which were measured	a) Lack of comprehensive knowledge and experience in comprehensive/best practices in contract management and administration b) Negligence c) Lack of contract management and administration Manual or Guideline	**X**	√
23.	For most projects there were no records to confirm that material tests were done.	Inadequate contract administration by Project Managers particularly on conducting required material tests.	**X**	√
24.	There were delays in paying certified monies. Retention monies were being deducted contrary to what was stipulated in the contracts whereby for some projects Retention monies were being deducted beyond the limits provided in the contracts	Inadequate contract administration by Project Managers and clients particularly on payment clause (*specifically payments and retention*) in the contract provisions	**X**	√
S/N.	**Persistent shortcomings**	**Primary Source/Cause**	**TAN-ROADS**	**LGA/ TARURA**
	Project Completion and Closure			

26.	There were no as-built drawings prepared for some of the completed projects.	Inadequate contract administration by Project Managers particularly on project completion and closure	√	√
27.	In some of the completed projects snag list were not prepared or inadequately prepared		**X**	√
28.	In all completed projects, there were delays in issuance of certificates of completion and or defects liability certificates		**X**	√
29.	There were no final project reports prepared for completed projects.		**X**	√
	Quality of Executed Works			
30	Road camber inadequately formed.	Inadequate supervision	**X**	√
	Gravel Material Issues: i) Premature Loose Gravel: Gravel layer were found to be wearing out in most of the road stretches. ii) Less Depth (inadequate gravel material) iii) Inadequate Compaction iv) Inadequate binder	Quality of the gravel lacking binder, design level for the road against the level on the sides of the road, inadequate compaction.	**X**	√
	Drains(mitre, catch water and road side) Issues: i) Not specified in the contract, ii) Inadequate in number iii) Inadequately made (shaped).	Poor planning, Inadequate design and inadequate supervision	**X**	√
	Persistent shortcomings	**Primary Source/Cause**	**TAN-ROADS**	**LGA/ TARURA**

	Site Cleanliness: In some completed projects the sites were not cleaned	Inadequate supervision	**X**	√
	Workmanship: To some projects, for example culverts and bridges were observed to have un treated honey combs as well as minor cracks	Inadequate supervision	√	√
31	Damages caused by animals encroachment to roads especially gravel roads and structures	Weakness in comprehensive project planning resulting into none provision of animal paths/corridors	**X**	√

Summary of Findings

From the analysis above, it can be learnt that there LGAs/TARURA are hampered by more persistent shortcomings as compared to TANORADS. Among the five key stages of project life cycle as per VfM tool, TANROADS has shown to have persistent shortcomings on three stages (i.e. procurement stage, construction stage and quality of executed works whereas, for LGAs/TARURA persistent shortcomings were found on all the five key stages of project life cycle.

Generally, the main causes of the observed persistent shortcomings are categorized according to the stage of the project cycle where it is experienced. For Planning, Design and Tender Documentation stage, the observed causes were; use of incomplete maintenance software (DROMAS for LGAs/TARURA) for planning stage, Inadequate designs, lack of general understanding of preparation of tender/contract documents, Inadequate application/use of the CESMM during preparation of Bill items, Failure by project Engineers in discharging their obligations particularly during planning stage. Procurement stage the observed causes were lack of skills in preparation of comprehensive technical (e.g. evaluation) reports or tendency of just ignoring things as business as usual, Lack of awareness on the requirement of the current Public Procurement Act (PPA) and its Regulations. Construction stage, the observed causes were; inadequate contract administration, inadequate supervision for works, lack of proper quality assurance programmes during project implementation. On Project Completion and Closure stage, it was due to inadequate contract administration. Likewise, on Quality of Executed Works stage, it was also due to inadequate contract administration and absence of animal paths/corridors.

3.4 Potential Areas of Improvements and Recommendations

Basing on the causes and sources of persistent shortcomings identified in **Table 3.4** above, the study is proposing some improvements to be made to address. over the study period of six financial years. **Table 3.5** presents the identified areas which need to be improved for satisfactory implementation of projects. Further, **Table 3.5** presents recommendations advanced for enabling the anticipated improvement.

Table 3.5: Potential Areas of Improvements

Potential Areas of Improvements	Recommendation
Planning Stage	
Use on appropriate tools for comprehensive project planning (software)	TARURA and TANROADS should ensure that a) Appropriate Software is installed and continuously updated b) Adequate knowledgeable and skilled personnel are available to use the Software c) All data required to use the software are available, reliable and are up to date; and d) Internal Policy should be made to make it mandatory for all projects to be planned using appropriate software and other tools.
Adequate and economical designs	All project which need to be designed, enough time should be provided for the adequate and economical designs to be prepared. This includes carrying out adequate feasibility study, preparing adequate design data, and enhance adequate design knowledge and skills as well ensuring availability of design tools. Also implementing agencies should make sure that deliberate efforts are made to enhance in house design skills . This includes availability of in-house design review and approval arrangement
Preparation of Tender and contract documents	a) Deliberate efforts in building capacity of those involved in preparation of tender/contract documents should be made. b) User Department should facilitate the Procurement Management Unit to prepare comprehensive Tender Documents. c) There should be an in-house arrangement to review prepared tender documents and other procurement documents

Potential Areas of Improvements	Recommendation
	d) Tender Boards should be enabled to comprehensively review tender documents and other procurement documents before approving them
Road condition survey/inventory skills and report preparation	Agencies should ensure that: a) There are knowledgeable and skilled personnel to carry out condition survey and prepare appropriate inventory reports b) adequate funds are allocated to enable carrying out Condition Surveys c) Planning and Design of maintenance project is based on condition survey reports d) .
Preparation Comprehensive Specifications for works	a) Agencies should have personnel with appropriate knowledge and skills to prepare adequate specifications b) TARURA should prepare a National Standard Technical specifications for maintenance of low volume roads (rural and urban roads)
Procurement	
Awareness to Public Procurement Act (PPA) and its Regulations.	a) There should be continuous efforts in imparting knowledge on PPA 2011 and its Regulations of 2013 as well as amendments of 2016 to all members of staff in respective implementing agencies. b) Agencies should ensure that Tender Boards and other Approving Authorities have adequate understanding of the Public Procurement Legislation. c) Prepare Simplified Procurement Implementation Manuals and Guidelines
Awareness on the procurement procedural forms prepared by the Public Procurement Regulatory Authority (PPRA)	a) Efforts should be made to create awareness on the use of available procedural forms for efficient procurement processes. b) Agencies should ensure that Tender Boards and other Approving Authorities have adequate understanding of the Public Procurement Legislation. c) Prepare Simplified Procurement Implementation Manuals and Guidelines
Awareness on the available useful guidelines on how to prepare different procurement reports	a) Efforts should be made to create awareness on the use of available guidelines for efficient procurement processes. b) Agencies should ensure that Tender Boards and other Approving Authorities have adequate understanding of the Public Procurement Legislation.

Potential Areas of Improvements	Recommendation
	c) Prepare Simplified Procurement Implementation Manuals
Construction	
Contract Management and Administration	a) The Road Fund Board, MoWCT and PORALG in collaboration with implementing Agencies should enable project implementing personnel to acquire necessary knowledge and skills in managing and administering projects. b) Prepare Simplified Project Management Manuals and Guidelines c) Prepare Standardized Contract Management Manuals and Guidelines
Project Completion and Closure	
Contract Management and Administration	a) The Road Fund Board, MoWCT and PORALG in collaboration with implementing Agencies should enable project implementing personnel to acquire necessary knowledge and skills in managing and administering projects. b) Prepare Simplified Project Management Manuals and Guidelines c) Prepare Standardized Contract Management Manuals and Guidelines
Quality of Executed Works	
Contract Management and Administration	a) The Road Fund Board, MoWCT and PORALG in collaboration with implementing Agencies should enable project implementing personnel to acquire necessary knowledge and skills in managing and administering projects. b) Prepare Simplified Project Management Manuals and Guidelines c) Prepare Standardized Contract Management Manuals and Guidelines

3.5 Review of the VfM Tool against the Normal Practice

For the purpose of this report, there was also a need of reviewing the Value for Money (VfM) tool which is currently in use. The review aimed at seeing whether the tool by itself currently suffices the current industry project implementation practice. The study recognizes that, there are several VfM tools which are available in the country and in the globe at large. However, since this study focused on road maintenance projects financed by the Roads Fund Board (RFB), the review of the VfM will equally be based on the RFB VfM tool.

The RFB tool is divided into five key project stages. (i.e *Planning Design and Tender Documentation Stage, Procurement Stage, Construction Stage, Project Completion Stage and Quality of Executed works Stage*). In each stage there are several criteria which have been set to enable someone conducting technical audit to follow and assess. These criteria were set by using a standard tendering document of the Public Procurement Regulatory Authority (PPRA). This document comprises of key project inputs one would require when conducting technical audit.

The study team went through all of the items in the VfM tool, and by making use of the knowledge and experience of the members of the study team, the following observations were made;

Engineers estimate

According to the information available in the tool, the technical auditor is directed or he/she is supposed to be in a position to establish whether the estimates were reasonably accurate and complete. Equally the scores are set depending on the outcomes of the assessment of the technical auditor.

Practice shows that, when conducting technical audit, it is very difficult for the technical auditor to get detailed information on engineer's estimates prepared by Implementing Agencies. Normally, technical auditors are being provided with just the final figure of the engineer's estimates.

It is recommended that, more clarifications should be put into the VfM user guide for it to be properly assessed. That, there should be explanations that, technical auditor will need to request for the detailed engineers estimate, and compare it with the bidders rates. In doing so, also the technical auditor will need to have enough information of the market prices of some key materials to enable him/her assess the reasonability of the tender which is being audited.

Quality of Environmental Management Plan (EMP)

This VfM criteria is designed to assess whether contract documents are prepared to adequately mitigate both short-term and long-term negative environmental impacts. Exceptionally, for road maintenance projects the tool do not require rigorous Environment Management Plan.

Nevertheless, it is required to assess whether there is adequate EMP with regard to destruction of vegetation, water pollution, reduced air quality due to dust emission, vibrations due to compactions, noise (from construction vehicles and plant),

disturbance on the cultural heritage, waste generation, accidental spills/contamination, poor sanitation, occupational hazards/ accidents, and loss of land.

Further, the following direct impacts and long-term negative impacts need to be audited where applicable: landscape deterioration; littering of wastes; soil erosion and sediment transport; noise; vibration and deterioration of air quality due to increased traffic volume; accidents due to traffic volume and speed increase; and induced development of business activities along the improved road or bridge.

However, a review of the Standard Tendering Documents used to implement these projects indicated that Clause 22.1 of the General Condition of Contract requires adequate precautions to be taken to ensure projects are environmentally safe. Sub Clause 22.1 of General Conditions of Contract of the PPRA (on Protection of the Environment) emphasizes that ‘*’The Contractor shall take all reasonable steps to protect the environment and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations.”*

Likewise, Sub Clause 22.1 of General Conditions of Contract of the PPRA (on Protection of the Environment) emphasizes that *‘’The Contractor shall ensure that emissions, surface discharges and effluent from his activities shall not exceed limits prescribed in relevant environmental laws.”*

Practice shows that, very few Implementing Agencies (IA) knowingly or unknowingly enforce this contractual requirement of protecting the environment.

It is the advice of the study that, contractually this is the obligation of the contractor and the tool should clearly reflect that to enable technical auditors to assess it properly.

Termination

The review of the VfM tool revealed that, termination of employment either by Employer or Contractor is not assessed. This has unfortunately been recorded, in recent years, as one among the issues often referred for arbitration. The fact that, in any project undertaking you cannot be guaranteed that termination may or may not happen.

Thus, it is proposed that, the tool should take on board the assessment of termination when conducting technical audit. At least the technical auditor based on

the information for termination availed to him should be able to judge whether procedures were followed or not.

Quality of Executed Works

In assessing the VfM for the project under the quality of executed works stage, the tool requires determination of whether dimensions of major items of road construction for completed projects comply with the drawings and technical specifications. The tool has mentioned the following items as major items of construction; Pavement Structure, Road carriage way, footpaths, road side drains, mitre drains and road signs.

However, when making reference to the Standard Specifications for Road Works (2000 Edition) prepared by the Ministry of Works Tanzania and in connection with the practical experience there are other items which are also major to road works but went missing in the tool.

This study recommends addition of items such as catch water drains, kerb and chutes, gabions, guard rails etc to be in the tool to enhance comprehensive assessment for VfM in projects.

The study has revealed that, with the view of the best practice the tool has to be improved on the following area; engineers estimates, protection of the environment, termination of contract and quality of executed works

3.6 Determination of Whether Technical Audit as Currently done is Adequate or should be Part of the Project Implementation Arrangement

The general purpose of technical audits is to enhance the quality of road construction. This report is a review of technical audits conducted at different IAs sponsored by RFB. As per Roads Fund Board, the objective of the audits is to provide an independent assurance to the Board, the Government, and other interested parties that resources earmarked for road maintenance activities from Roads Fund are judiciously applied for the intended purpose and realise Value for money.

3.6.1 Technical Audit as currently done

Currently the technical audit is carried out to selected regions as per RFB plans. The Board selects consultants through competitive procurement method. Engaged consultants, have to sample seven projects from each implementing agency (IA). The sample is based on the type of maintenance, i.e. periodic maintenance, routine maintenance, spot improvement, bridges/culverts and development project. These sampled projects will be audited in two circles. The first circle is done at the end of financial year where the annual audit report is produced, and the second cycle is done after the second quarter of the following financial year, specifically to make follow up of the projects which rolled over, and the roll over report is produced thereafter.

it can be seen that the current way of conducting audit is not adequate. First because not all projects are being audited; only few projects represent the rest of the projects being implemented by the respective implementing agency. Second, the timing of the audit whereby, it is commonly conducted at the end of the financial year, in which case projects are expected to be completed, as such they are post mortems. For proper preventive audit, it was supposed to start the audit exercise at initial stages of project implementation. Third, the persistent findings mentioned in this report also justifies that the current way of carrying out technical audit is inadequate.

3.6.2 Suggested ways of Conducting Technical Audit

Through this study, the team suggests technical audit to be part of project implementation arrangement and should be continuous as the project progresses. This can be done in two ways as follows:

i. Establishment of Internal Technical Audit Unit

There should be an Internal Technical Audit Unit in each IA. Internal Technical Auditor will be part of project management. The Technical Auditor should have technical qualifications to enable him/her performs his/her responsibilities. The arrangement can be as that of the Internal Financial Auditor being practised in different public institutions. The Internal Technical Auditor could be carrying out audit any time as part of his/her daily activities. He/she will have to access the site and project documents at any time as per his plan and requirements. In connection to that, Internal Technical Auditor will be required to produce Technical Audit reports on quarterly basis. The Consultant, Contractor and Client must make available to the Auditor any document, as and when required by him and relevant clauses in the tender documentation and/or his job description will make provision for this.

The Auditor can review actions of the Client during the project implementation and any deficiencies or lack of performance should be noted in his/her reports. This should make the process transparent, with improvements on internal project practices and avoid problematic projects.

ii. Technical Audit in Stages Throughout the Project Life Cycle

The second way is by carrying out the technical audit in stages. By this, the Technical Auditor will be appointed as early as possible after appointment of the Supervising Consultant and immediately (preferably) before the start of the tender process and appointment of the Contractor. This will allow the Auditor the opportunity to assess the evolution of the project to its current stage.

Gross deficiencies in design, Bills of Quantities or tender documents identified by the Auditor and reported to the Client, may necessitate revisions. The Technical Auditor may, in addition to his/her specified duties, be called on to act as an advisor to the Client on matters pertaining to the project.

The Technical Audit could be carried out in four stages which can be spaced through the duration of construction of a road project in order to build in an early warning system. These four stages are: project familiarization, initial audit, intermediate audit and final audit.

At the conclusion of each stage of an audit, the Auditor will present his findings in a report to the Client who may deem it necessary to hold a conference with the Engineer, to advise him of the major conclusions in the Auditors'report. Obvious problems identified during the Audit process (e.g. the use of inappropriate materials) will be brought to the notice of the Client for early intervention. Should there be any doubt as to construction requirements being fulfilled during the project and no remedial action having been taken, the final audit will recommend that a post construction technical audit be carried out. After the final audit, an exit conference to discuss the conclusions of the Technical Audit may be requested by the Client. This can involve the Client and Auditor and other relevant parties invited by the Client.

CHAPTER FOUR

4.0 Findings and Recommendations

This chapter summarizes findings of the study and proposed recommendations for efficient projects implementation and enhanced quality of road construction for achieving value for money in projects. Below are the findings and recommendations of the study;

4.1 Study Finding(s)

a) The study has revealed that, on the identified key findings the construction stage has shown to have more audit issues, as it contributes 29% of all the issues in the five key project life cycle stages. This is followed by the quality of executed works which contributes on issues by 24%. For planning, Design and Tender Documentation as well as Procurement stage results have shown to have same level of contribution on issues. They contribute by 18% each. Lastly, the stage which has shown to have less number of issues compared to the rest was project completion and closure, which contributed by 10% on all the identified key findings.

b) The study has established that there have been improvement in performance trend for TANROADS. TANROADS has eliminated 20% of its previous shortcomings. However, the analysis shows that there are still persistent shortcomings, these account for 38% of all shortcomings recorded for TANROADS. Similarly the study has established that there are about 30% of recorded shortcomings which are still recurring. 10% of the findings had peculiar occurrence. Lastly, 3% of the observed findings were termed as newly occurring findings.

c) Performance improvement trend for LGAs/TARURA, the analysis shows on the studied findings 68% were found to be persistent. Moreover, 16% were found to be recurring. LGA/TARURA has shown to have their findings improved by 9%. 5% of the findings had peculiar occurrence. Lastly, 2% of the observed findings were termed as newly occurring findings.

d) Study results show that there is big number of persistent shortcomings on the side of LGAs/TARURA as compared to TANROADS. Among the five key stages of project life cycle as per VfM tool, TANROADS has shown to have persistent shortcomings on three stages (i.e. *procurement stage, construction*

stage and quality of executed works stage). Whereas, for LGAs/TARURA persistent shortcomings were found on all the five key stages of project life cycle.

e) Generally, the main causes of the observed persistent shortcomings were categorized as per 5 project life cycle stages.

   i) **For Planning Design and Tender Documentation stage**, the observed causes were; use of incomplete maintenance software (DROMAS for LGAs/TARURA) for planning stage, Inadequate designs, lack of general understanding of preparation of tender/contract documents, Inadequate application/use of the CESMM during preparation of Bill items, Failure by project Engineers in discharging their obligations particularly during planning stage.
   ii) **Procurement stage** the observed causes were lack of skills in preparation of comprehensive technical (e.g. evaluation) reports or **tendency** of just ignoring things as business as usual, Lack of awareness on the requirement of the current Public Procurement Act (PPA) and its Regulations.
   iii) **Construction stage**, the observed causes were; inadequate contract administration, inadequate supervision for works lack of proper quality assurance programmers during project implementation.
   iv) **On** Project Completion and Closure stage, it was due to inadequate contract administration.
   v) **Likewise, on Quality of Executed Works stage**, it was also due to inadequate contract administration and absence of animal paths/corridors.

f) On potential areas of improvements for proper project execution, the study has revealed the following areas to be addressed;
   i) Tools for efficient project planning (*software*) for TARURA
   ii) Preparation of adequate and economical designs
   iii) Preparation of Tender and contract documents
   iv) Road condition survey/inventory skills and report preparation
   v) Preparation of specifications for works for TARURA
   vi) Awareness to Public Procurement Act (PPA) and its Regulations
   vii) Awareness on the procurement procedural forms prepared by the PPRA
   viii) Awareness on the available useful guidelines on how to prepare different procurement reports and
   ix) Contract Management and Administration

g) The study has revealed that, the tools have some deficiencies on the following area; engineer's estimates, protection of the environment, termination of contract and quality of executed works.

h) The study has revealed that, for proper project implementation there is a need of having Technical Audit as a part of project implementation arrangement.

4.2 Study Recommendations

a) Though all the stages have shown to have issues, the study recommends more efforts to be directed on the post contract stage (*particularly on construction and quality of executed works stages*).

b) In order to Improve performance of the IAs, the following are recommended;

   i) Improvements in the general understanding of PPA and its Regulations
   ii) Capacity building programme particularly trainings conducted by some relevant authorities. Adherence to Technical Audit recommendations
   iii) Enhanced supervision capabilities
   iv) Awareness on Health and Safety Issues created
   v) Ensure proper contract administration
   vi) Provide animal paths/corridors

c) The study recommends the following on addressing the identified areas which need improvements

   i) Relevant authorities particularly TARURA should make sure that complete, tested and user friendly maintenance software is in place for use by project Engineers for planning purposes.

   ii) All project which need to be designed, enough time should be provided for the adequate and economical designs to be prepared including enhancing in-house design capabilities.
   iii) Deliberate efforts in building capacity of those involved in preparation of tender/contract documents and all other reports should be made.
   iv) TARURA should make sure that specific specifications for maintenance of rural and urban roads are put in place (*low volume roads*).
   v) There should be continuous efforts in imparting knowledge on PPA 2011 and its Regulations of 2013 as well as amendments of 2016 to all members of staff in respective implementing agencies.
   vi) Efforts should be made to create awareness on the use of available procedural forms and guidelines for efficient procurement processes.

vii) Implementing Agencies and other regulatory boards should make sure that project Engineers are equipped with all the necessary skills in managing and administering projects.

d) The study recommends with the view of the best practice the tool has to be improved on the following area; engineers estimates, protection of the environment, termination of contract and quality of executed works.

e) The study proposes two ways of having Technical Audit as part of project implementation arrangement; (i) Establishment of Internal Technical Audit Unit and (ii) Implementing Technical Audit in Stages throughout the Project Life Cycle.

1. Technical Audit Report for Financial Year 2012/13 prepared by NCC
2. Technical Audit Report for Financial Year 2013/14 prepared by NCC
3. Technical Audit Report for Financial Year 2014/15 prepared by NCC
4. Technical Audit Report for Financial Year 2015/16 prepared by NCC
5. Technical Audit Report for Financial Year 2016/17 prepared by NCC
6. Technical Audit Report for Financial Year 2017/18 prepared by NCC
7. Standard Tender Document for Works Prepared by PPRA, December 2018
8. Public Procurement Act 2011,
9. Public Procurement Regulations 2013 and its Amendments of 2016

Appendix: Data Collection Tables