MALAWI INFRASTRUCTURE DELIVERY MANAGEMENT STANDARDS

Project Management System
Subsystem No. 4

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GLOSSARY OF TERMS

Client organization
Any agency or department or individual who is authorized to acquire, construct, finance or otherwise provide for the construction project.

Parties to Contract
Any individual, group or organization participating in a contract and will have legally binding obligations and responsibilities to fulfil.

Scope of work
detailed total amount of work needed to be done to complete a project.

Unit rate
Basis of arriving a correct cost per unit work.

Unit rate analysis
This is the analysis that leads to the definition of unit rates of work by identifying the basic requirements such labour, materials and equipment.

Packages-
This is the arrangement of sub-projects that contribute to a large program

Time Schedule
Period for construction works

Portfolio
Collection of programs or projects and processes that are managed together and optimized for the financial and strategic goals of an organization

Fit for purpose
another meaning of quality

Design life
period of infrastructure used as intended by the designer after which it may be replaced

Concept
the idea or brain child of a construction project that justifies project construction

Selective Tendering
Client approaches single supplier based on previous experience in contract

Open Tendering
Allows anyone to submit a tender for construction services

Restricted Tendering
Procurement method that limits request for tenders to participate in bidding

RFQ
Asking for a set of potential construction service providers to submit price quotes and compete for a construction project.

National Competitive Bidding (NCB)
Procurement method limited to suppliers within a national supplier of goods and services

International Competitive Bidding (ICB)
Procurement method limited to suppliers not limited to one country suppliers of goods and services

Defects Liability Period (DLP)
A set period of time after construction project completion during which the contractor is still responsible for maintenance even after hand over to the client.

Final Account
An agreed financial statement of money to be paid at the end of a construction project by client to the contracted party.

Interim Payment Certificate
Staged payment or instalment paid to contracted party by project client

INTRODUCTION

The Malawi Infrastructure Management System (IDMS) guidelines have been authored and written as a guide to all Construction Industry players in implementation of quality infrastructure. The guidelines have been developed to respond to poor project planning and management which often results in poor quality infrastructure in the Construction Industry. The Council regulates the Construction Industry to ensure quality infrastructure in the country, however, there has been a gap between the Industry players and the Client organizations. Based on observations by the Council, a good number of client organizations do not fully understand the processes of Construction Project Management lifecycle. The IDMS addresses the gap that exists in the Construction Industry and provides the user with rich knowledge on how infrastructure projects are supposed to be conceived, planned, designed, procured, implemented and maintained.

The guidelines have seven subsystems namely; Infrastructure planning system, infrastructure gateway system, infrastructure procurement system, project management system, operation and maintenance system, supply chain management and infrastructure technical audit system. These subsystems are very useful in quality infrastructure delivery in the country.

The IDMS is an informative resource because it outlines simplified steps which can be followed for the management of life cycle of infrastructure. The guidelines have been written in a simplified manner for easy understanding and use by every player in the Construction Industry. The IDMS will contribute greatly to delivery of quality infrastructure in the country when put to the right use.

The guidelines have seven subsystems namely; 1-Infrastructure planning system, 2-infrastructure gateway system, 3-infrastructure procurement system, 4-project management system, 5-operation and maintenance system, 6-supply chain management, 7-infrastructure technical audit system.

Article I.

PROJECT MANAGEMENT SYSTEM

Section 1.01 General

1.1 The implementation of projects is managed according to the traditional approach to project management. This approach requires division of the project's life cycle into a number of distinct "phases" (also called "stages"), based on the intrinsic logic of the project development process.

1.2 Projects are implemented in four phases, i.e. (1) planning, (2) design, (3) works and (4) close-out, with each phase consisting out of a number of sub-phases. Each project phase has its own objectives, usually expressed in terms of the completion of one or more phase deliverables.

1.3 Approval of these phase deliverables is normally a pre-requisite for commencing with the subsequent phase of the project.

1.4 This outlines the process and procedures recommend pertaining to infrastructure project management. It is the subject that is addressed in this document. This element / process will prescribe project management requirements during execution of infrastructure projects.

1.5 The implementation of packages and projects are preceded by a Portfolio Management process. The portfolio planning process is aimed at the identification, definition, appraisal and evaluation of "Potential Projects" to be listed in the Infrastructure portfolio.

1.6 On completion of the works (as described in the project/package scope of works) the constructed/renovated/refurbished/repaired infrastructure or immovable asset is officially handed-over to the Operations and Maintenance Team for on-going management. The duties and responsibility of this Team.

Table 1:The recommended Management Framework for the Implementation of Infrastructure Projects

PHASE	DESCRIPTION	GOALS	PHASE CONTROL GATE
1.0	**PLANNING**		
1.1	Package Preparation	To develop a Strategic Brief (a user requirement specification) for each Package.	1. Acceptance by the Client of the Strategic Brief; 2. Approval by the Client of Project Execution Plan
1.2	Package Solution	To develop a design concept that will enable the client to establish the feasibility of satisfying the package requirements.	1. Acceptance by the Client of the Concept Report; 2. Approval by the Client of Project Execution Plan
1.3		To develop Work Plans in response the User Departments Works List.	Approval by the User Department
2	**DESIGN**		
2.1	Concept Design	To develop the accepted concept and to finalize the design and definition criteria.	1. Acceptance by the Client of the Design Development Report; 2. Approval by the Client of Project Execution Plan
2.2	Detail Design and Specification	To produce the final detailing, performance definition, specification, sizing and positioning of all systems and components.	1. Acceptance by the Client of the Production Information; 2. Approval by the Client of Project Execution Plan
2.3	Manufacture, Fabrication and Construction Information (if required)	To produce the manufacture, fabrication and construction information based on the production information	Acceptance by the Client of the Manufacture, Fabrication and Construction Information
3	**Works**		

3.1	Construction/Delivery	To construct/deliver the works according to the working drawings and specifications.	1. Acceptance of the completed works for occupation by the Client; 2. Issue of a Practical Completion Certificate; 3. Approval of Project Execution Plan
3.2	Handover	To facilitate smooth transition of the completed works from the project team to the Operations and Maintenance personnel.	1. Acceptance by the Client of the completed works; 2. Completion Certificate; 3. Approval of Project Execution Plan
4	**Close-out**		
4.1	Close-out	1. To close out the project by verifying the scope of the work done by alL Consultants and Contractors; 2. To effect final payments to all service providers; 3. To archive all record information and statutory certificates.	1. Client of record information and statutory certificates; 2. Issue of a Final Completion Certificate. 3. Approval of Completion Report. 4. Acceptance of Project Execution Plan
4.2	Post Project Evaluation	To assess the actual project benefits against the	Submit evaluation report.

1.7 The Framework is based on the assumption that certain "pre-project" planning activities have already taken place. These activities are normally described as:

a) The *conceptualization and/or initiation* of the project and include actions such as the *identification* of a need or requirement
b) The *justification* for addressing this need or requirement by means of a description of the *benefits* that the project will yield
c) The appraisal and evaluation of the proposed project against pre-determined criteria
d) The inclusion of, and budgeting for a project in a User Infrastructure budget

Section 1.02 Project Management Framework

2.1 The Project Management Framework requires strict adherence to the principle of phase controls, i.e. the approval of certain phase deliverables as a prerequisite for the commencement of the next phase of the project.

2.2 The key deliverables at the end of each phase also need to be accepted by the client to ensure that scope creep and project risks are understood and agreed to before proceeding to the next phase of implementation.

2.3 Where the cost estimate indicates that the available budget will be exceeded, either additional budget must be obtained or the package information adjusted such that the cost is within the available budget. This needs to be undertaken before proceeding to the next phase of implementation

2.4 The end of each phase is regarded as a "control gate" which needs to be opened to allow access into the next phase of the project.

2.6 These control gates play a very important role in the planning and control of a project: the actual date of approval can be measured against the planned date of approval in order to evaluate whether the project is before or behind schedule. Gate approval can also be seen as a "milestone" and indicator of overall progress.

Article II.

PROJECT GOVERNANCE

Section 2.01 General

1.1 Governance is the framework by which an organization is directed and controlled.

1.2 Project governance includes, but is not limited to, those areas of organizational governance that are specifically related to project activities. Project governance may include subjects such as the following:

a) defining the management structure;
b) the policies, processes and methodologies to be used;
c) limits of authority for decision-making;
d) stakeholder responsibilities and accountabilities;
e) interactions such as reporting and the escalation of issues or risks.

1.3 The responsibility for maintaining the appropriate governance of a project is usually assigned either to the project sponsor or to a project steering committee.

1.4 The project management committee or team should have members or at least one member who are registered as:

a) a Graduate or Professional Architect registered in terms of the BOAQS Act;
b) a Graduate or Professional Engineer in terms of MEI Act;

or

c) a Graduate or Professional Quantity Surveyor in terms of the BOAQS Act.

Section 2.02 Stakeholders and project organization

2.1 The project stakeholders, including the project steering committee should be described in sufficient detail for the project to be successful.

2.2 The roles and responsibilities of stakeholders should be defined and communicated based on the organization and project goals. Typical project stakeholders are shown in Figure 1.

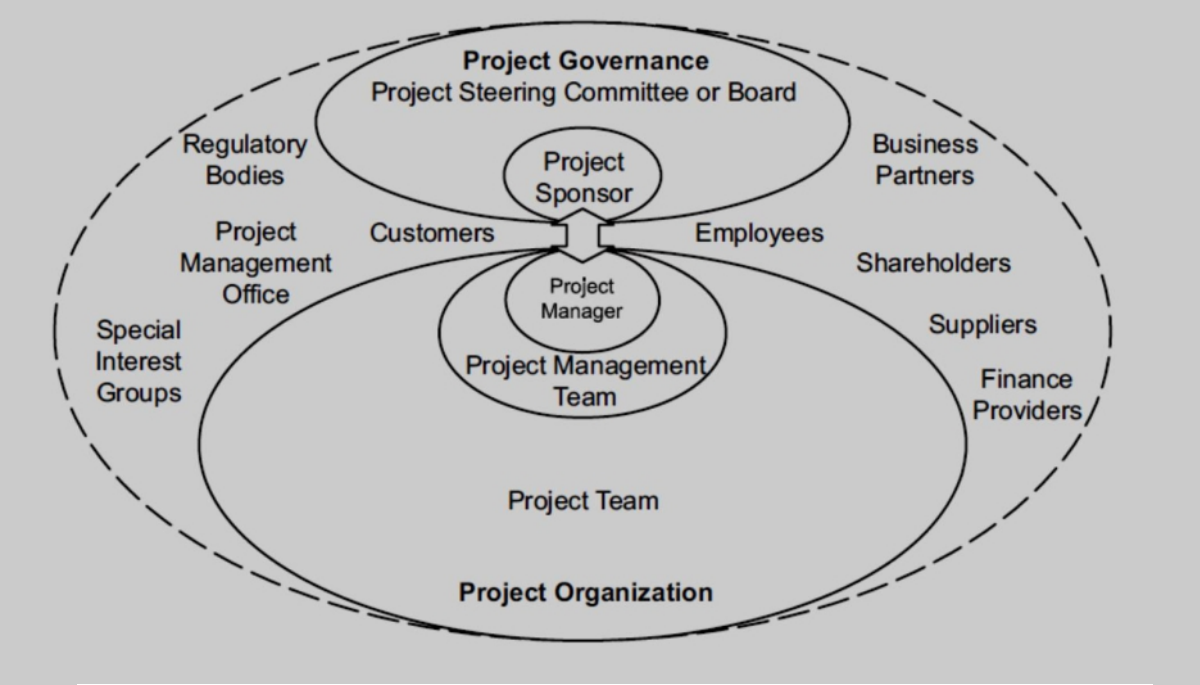

Figure 1: Typical project stakeholders

2.3 Stakeholder interfaces should be managed within the project through the project management processes described in Article III.

2.4 The project steering committee is the temporary structure that includes project roles, responsibilities and levels of authority and boundaries that need to be defined and communicated to all stakeholders of the project.

2.5 The project organization may be dependent on legal, commercial, interdepartmental or other arrangements that exist among project stakeholders.

2.6 The project organization may include the following roles and responsibilities:

a) the project manager, who leads and manages project activities and is accountable for project completion;

b) the project management team, which supports the project manager in leading and managing the project activities;

c) the project team, which performs project activities.

Section 2.03 Project governance

3.1 Project may involve the following:

a) the project sponsor, who authorizes the project, makes executive decisions and solves problems and conflicts beyond the project manager's authority;

b) the project steering committee or board, which contributes to the project by providing senior level guidance to the project.

c) customers or customer representatives, who contribute to the project by specifying project requirements and accepting the project deliverables;

d) suppliers, who contribute to the project by supplying resources to the project;

e) the project management office, which may perform a wide variety of activities including governance, standardization, project management training, project planning and project monitoring.

Section 2.04 Competencies of project personnel

4.1 Project personnel should have competencies in diverse disciplines which are affected by the project as well as project management in order to achieve project objectives and goals.

4.2 The project steering committee shall at minimum have at least one member who shall be registered as:

a) a Graduate or Professional Architect registered in terms of the BOAQS Act;

b) a Graduate or Professional Engineer in terms of MEI Act;

or

c) a Graduate or Professional Quantity Surveyor in terms of the BOAQS Act.

4.3 The project steering committee shall be led by a project manager who shall be registered as:

a) a Graduate or Professional Architect registered in terms of the BOAQS Act;

b) a Graduate or Professional Engineer in terms of MEI Act;

or

c) a Graduate or Professional Quantity Surveyor in terms of the BOAQS Act.

4.4 The project steering committee shall have competent individuals who are capable of applying their knowledge and experience to provide the project deliverables.

4.5 Any identified gap between the available shall be promptly filled to avert risks that may arise due to such gaps.

Article III.

PROJECT MANAGEMENT PROCESSES

Section 3.01 Project management methods

1.1 This Standard identifies the recognizes that there are numerous project management process that can be applied during execution of infrastructure projects.

1.2 This standard recommends that the project management process should allow significant coordination such that each process or stages are appropriately aligned and connected with other processes.

1.3 Project steering committee and other project stakeholders, should carefully consider the project management processes identified and apply them as appropriate to the project to realize organizational needs.

1.4 The Project Manager should tailor the project management processes for the infrastructure project or project phase by determining what processes are appropriate and the degree of rigor to be applied for each process. The tailoring should be accomplished in accordance with the relevant organizational policies.

1.5 In order for a project to be successful, the following actions should be accomplished:

a) determine appropriate processes that are required to meet the project objectives;
b) use a defined approach to develop or adapt the product specifications and plans to meet the project objectives and requirements;
c) comply with requirements to satisfy the project sponsor, customers and other stakeholders;
d) define and manage the project scope within the constraints, while considering the project risks and resource needs to provide the project deliverables;
e) obtain proper support from each performing organization, including commitment from the customers and project sponsor.

Section 3.02 Project management process

2.1 This Stage immediately succeeds Initiation stage, where the project conceptualization has been completed and actual construction is about to kick off.

The Client needs to pay detailed attention to the following steps in order to successfully manage infrastructure projects:

2.3 Ensure that a signed contract is available which clearly specifies roles, obligations for each party of the contract (e.g. defects liability period, payment period, provision personnel etc.), scope, dispute resolution mechanisms, reporting lines, communication channels and risk allocation

2.4 The client must ensure that there are adequate funds and other resources for the project

2.5 Hold kick off meeting and ensure that the Construction site is handed over to the Contractor in accordance with Contractual provisions. Produce a report and submit to Senior Management and Corporate Board.

2.6 Ensure that the Contractor fully mobilizes the construction site as specified in the Contract document. This may include but not limited to the following; erection of temporal infrastructure for Hygiene, Safety, traffic detours, site offices, personnel transport arrangements, staff accommodation, reliable source of water and others. These must be certified by the Project Manager.

2.7 Then the Contractor can commence execution of the actual works under full supervision of the registered supervising Consultants or Project Manager.

2.8 Ensure that only approved, updated and complete technical drawings are used at any section of works in execution.

2.9 Each component of the completed work's clam must be fully certified by the project Manager prior to Client payment.

2.10 In case of any Scope Creep during project implementation, the Project manager must recommend for approval to the Client in writing and no change shall be effected on the works without client's approval. This also applies to any Cost Variation on the project.

2.11 All Instructions must be formally written and copied to all contracted parties on a project before their implementation.

2.12 Client shall at all times have an access to site records regarding to the project implementation.

2.13 Any work done by the Contractor in absence of the supervising Consultant Engineers shall not be accepted unless otherwise provided for.

2.14 Ensure that the Project Manager interprets technical details of the project to Client's understanding before an approval is granted on any issue

2.14 Ensure that there are timely payments to the contractors and Consultant engaged on the project and all retention money are retained in line with the provisions of the contract

2.15 Ensure that engaged contractors and consultants have valid licenses.

2.16 Identifying, managing and controlling risks

2.17 Evaluate the performance and capacity of Contractors and Consultant against agreed performance criteria continuously throughout the project and report to Senior Management and Corporate Board who shall report to the NCIC.

2.18 Ensure compliance to all laws related to the construction industry, ESIA report, donor requirement and many other regulations throughout project life cycle

2.19 Ensure stakeholder management and timely dispute resolution in accordance with provisions of the contract

2.20 Carry out site visit, attend progress meetings and produce monthly progress reports for Senior Management or Corporate Board and copied to all contracted parties.

2.21 Track project progress against the project baseline, inform Senior Management or Corporate Board on any challenges, deviations from the planned time and financial schedule and lessons.

2.22 Ensure timely response to matters raised by consultants and/or contractors in accordance to the provisions of the contract.

2.23 Escalate issues or matters to Senior Management or Corporate board that require their action

2.24 All instructions or changes on the project be given to the contractor through the Project Manager.

2.25 Review and approve operation and maintenance plan

2.26 Capture contract completion / termination data

2.27 Ensure proper Demobilization stages have been followed by the Contractor prior to project handovers and handover minutes are agreed by all parties.

2.28 Where applicable, ensure that partial handovers of infrastructure components follow set acceptance criteria and approved by the Senior Management or Corporate Board.

2.29 Undertake an Infrastructure Technical Audit, at any stage of the project, and document corrective measures and lessons.

Section 3.03 Asset data /close out stage

3.1 The client will need to ensure that the information obtained is stored where it can be easily retrieved. Where necessary during this stage, in relation to the works, the client will have to:

3.2 Agree on a date for practical completion and project handover

3.3 Inspect and test infrastructure components to ensure that they comply with agreed specification;

3.4 Develop a snag list for all nonfunctioning components and ensure that they are corrected as provided in the contract document

3.5 Ensure that practical completion certificate is issued to the contractor and at most 50% of the retention money released to the contractor depending on the contractual provision.

3.6 Ensure that all recoveries e.g. penalties, advance payments etc. have been recovered.

3.7 Where applicable, ensure that performance bonds or any other bonds are released to the Contractor within a reasonable time and as provided in the contract document.

3.8 Ensure that all outstanding payments to all suppliers are made.

3.9 Ensure that final project management plans and all necessary documents about the project are updated and archived in the company records.

3.10 Ensure that lessons learned are documented should be stored in the organizational process assets of the company.

3.11 Ensure that operation and maintenance manuals and as built drawings are produced and stored in the archive.

3.12 update portfolio asset register

3.13 Produce a report and submit

Section 3.04 Project completion

4.1 During this stage after considerable completion and the client has possessed the works, the contractor will be expected to correct all defect that may arise for a specific period of time specified in the contract conditions. The following activities shall be undertaken where necessary during this stage in relation to the works:

a) Ensure that all defects that are detected during the defect's liability period are corrected;

b) complete the contract by finalizing all outstanding contractual obligations including the finalization and payment of amounts due after the expiry of the defect's correction period

c) establish if the objectives of the project have been achieved; and

d) compile a completion report for the project outlining what was achieved in terms of specifications and make suggestions for improvements on future projects of a similar nature

Section 3.05 Handover stage

5.1 After the contract has been successfully completed, the client will be required to keep a record of the infrastructure and update his portfolio. During this stage, the consultant will be required to produce a final account which he will submit to the client.

5.2 The consultant will be required to ensure that these products/documents have been handed over and stored. Thus, the client needs to ensure that the Consultant must:

a) finalize and assemble record information which accurately reflects the infrastructure that is acquired, rehabilitated, refurbished or maintained; and

b) hand over the works and record information to the user and, if necessary, train end user staff in the operation of the infrastructure.

Article IV.

IN-USE EVALUATION

Section 4.01 General

1.1 During use of the structure, the client will be required to constantly evaluate performance of the structure against the desired performance.

1.2 It is recommended in this guideline that such an exercise should be done for a period of up to one year depending on the size and complexity of the infrastructure.

1.3 This process can be undertaken on new, modified, refurbished or rehabilitated infrastructure. The client will have to:

a) observe infrastructure in use; and

b) produce a report which provides integrated feedback aimed at continuous improvement of delivered infrastructure.