

MALAWI INFRASTRUCTURE DELIVERY MANAGEMENT STANDARDS



Summary of all Subsystem





INFRASTRUCTURE PLANNING SYSTEM

Infrastructure planning is a critical stage in infrastructure development and management system. The subsystem assists the client to determine if there is need to have new infrastructure or not. The client is supposed to do the following:

Activity	Requirements and approvals
Identify the need for infrastructure	Assess the capacity of the available infrastructure against the demand Establish if there is need to construct new infrastructure, maintain, expand or manage the existing to fit with the demand
Develop infrastructure plan and project brief	If there is need for new Infrastructure, assess requirements through identification of gaps based on the client's strategic objectives and policy. Develop infrastructure plan for a specified period for approval by management
Budgeting for infrastructure	Ensure that all project stages/requirements such as project design, construction, technical audits, operation and maintenance are budgeted accordingly.
Engagement of Consulting firm/construction exerts	When planning on engagement of a consultant, ensure that all documents are in place such as request for proposals, terms and conditions, setting out the parties' obligations, to which the parties attach various schedules such as scope of services, which lists the services that the professional consultant is providing and obligation of clients
Planning for construction works and handover	Ensure that you have obtained all statutory approvals, specify evaluation criteria and ensure that tender documents are available such as: Bills of Quantities, drawings, schedules and any other documents forming part of the contract.
Maintenance planning	At design stage of infrastructure, incorporate maintenance plan for the project being designed such as frequency of maintenance, recruit a technical person to ensure proper maintenance of the infrastructure, check that you have all relevant documents such as asset register and as built drawings.

Note: If any of these stages is not approved, the project shall not proceed to the next stage. Checklist of all requirements can further be checked in the main document.



INFRASTRUCTURE GATEWAY SYSTEM/ QUALITY ASSURANCE SYSTEM

The infrastructure gateway subsystem is a control system that ensures that a project should not proceed to the next level before it is subjected to a control test. A control test is a checklist of items that need to be fulfilled before the project proceeds to the next stage. The gates are as follows:

Activity	Gate No.	Documents required for management's approval	Key Experts	Output/approved document
Infrastructure Planning Stage	1	Infrastructure plan for a specific period containing: Scope of the project, proposed time schedule, estimated total project cost and annual budget requirement, geographical location and a summary of monitoring and reporting requirements	Project team experts, management	infrastructure plan
Procurement planning	2	Names of Internal Procurement and Disposal of Assets Committee, Establishment of tender evaluation team, the form of contract to be used procurement route. Ensure that the committees are led by technically qualified personnel	Engineers Architects, Quantity surveyors procurement experts	Construction Procurement Strategy
Package preparation	3	Concept Architectural, Landscape, Structural engineering, services designs, project specifications and Preliminary feasibility study	Engineers Architects	Strategic brief
Package definition	4	Detailed aim of the project, scope of the project, preliminaries of: three design options, cost estimate (Bills of Quantities), programme of works, quality assurance plan, Preliminary geotechnical surveys and site investigations, Health and safety plan	Engineers Architects Quantity surveyors	Concept report
Design development stage	5	Detailed architectural, engineering, Building systems design information, specifications, cost estimate (Bills of Quantities), programme of works, quality assurance plan	Engineers Architects Quantity surveyors	Design development report
Design documentation	6	Production information such as tender evaluation criteria, general conditions of contract, special conditions of contract, detailed architectural Engineering designs and specifications, bills of quantities,	Engineers Architects Quantity surveyors	Production information



		programme of works, detailed quality assurance plan		
Works stage	7	Certificates of actual quantities of works done and planned schedule and actual works	Consultant	Works completed
Handover stage	8	Practical completion certificate archive record information and update portfolio asset register	Consultant Client	Works taken over by clients with records
Closeout stage	9	Final account and Asset register	Consultant Client	Asset data and final payment

Note: If any of these stages is not approved, the project shall not proceed to the next stage.

INFRASTRUCTURE PROCUREMENT SYSTEM

The infrastructure procurement subsystem is aimed at providing guidance to Client Organisations on ensuring that the process of management infrastructure is in accordance with the law and the organizational priorities.

Infrastructure procurement involves several steps:

Establish what works and services are to be procured: Clients need to prepare scope of work for procurement, estimate financial value of proposed procurement and obtain permission to start with the procurement process

Solicit tender offers: prepare procurement documents, obtain approval for procurement documents and confirm that budgets are in place. Invite tender offers or expression of interest, receive submissions, open and record submissions received.

Evaluate tender offers: Tender evaluation teams should consist of construction graduate or professional registered with their respective professional boards. Evaluate and prepare evaluation report on submission received, obtain authorization to proceed with next phase of tender process, invite tender offers from qualified respondents or selected tenderers, Open and record submissions received and Evaluate tender offers and prepare a tender evaluation report.

Award Contracts: Compile tender evaluation report, notify unsuccessful tenderers of outcome, compile contract document, award contract and capture contract award data on management systems. Communicating of tender results to all bidders shall be done in writing.



Administer contracts and confirm compliance with requirements: Administer contract in accordance with the terms and provisions of the contract. Confirm compliance with requirements, capture contract completion / termination data, obtain approval to exceed the total of prices, excluding contingencies and price adjustment for inflation, or the time for completion at award of a contract or the issuing of an order by more, obtain approval to cancel or terminate a contract, obtain approval to amend a contract, obtain approval to cancel or terminate a contract and close out the contract

Compliance issues

Infrastructure procurement shall be implemented in compliance with standard documents and in compliance with the NCI Act and PPDA Act. This also includes other regulatory framework such as Regulations, best practice notes, Procedures and Standards issued by National Construction Industry Council. Malawian contractors shall be given preference in the evaluation of tenders, and minimum local participation shall be included in contracts.



INFRASTRUCTURE PROJECT MANAGEMENT SYSTEM

The infrastructure project management subsystem divides a project into distinct phases such as preconstruction, construction and close out. Each phase needs to be fully completed and signed off in order to move on to an upcoming phase.

i) Main players in infrastructure project management

No	Name	Roles
1	Client	prepare and complete the contract agreement, decide on contract type, ensure compliance to relevant laws, to approve key deliverables at the end of each phase for the project to proceed, make payments of certificates within stipulated time
2	Consultant	shall provide design and supervision services as set out in the schedules of duties required by a consultant, obtain statutory approvals, follow up on issuance of construction permits with concerned local authorities, ensure Quality Control for construction and maintenance works, check and approve payment certificates.
3	Contractor	execute and complete the works and remedy any defects therein in accordance with the provisions of the contract. institute a Quality Assurance Plan, comply to all relevant legislation provisions and quality requirements

ii) Project management stages

Initiation: defining the project scope, objectives, resources of the project and roles of different stakeholders and expectations

Planning: developing the project plan, schedule, budget, and resources. you need to establish project milestones, communication plan, identify project risk and mitigation measures and track the project budget.

Execution: implementing the project activities and deliverables Further, there is need to monitor works so that are done according to the working drawings and specifications.

Close out: the client must ensure that the following items have been addressed: outstanding payments, lessons learned, operation and maintenance manuals and as built drawings are recovered, updated and archived in the company records.

During use: the client needs to do the following:

- constantly evaluate performance against the desired performance and produce a report.
- continuous maintenance of delivered infrastructure.
- update portfolio asset register



OPERATION AND MAINTENANCE SYSTEM

Operations and Maintenance (O&M) consists of all operational work from the moment assets have been captured into the infrastructure asset register and handed over to client. An asset register is a detailed list of all immovable assets which are owned by an organization and should have these 3 basic information:

- i) General information such as asset identification, location
- ii) User information
- iii) Technical condition related to replacement, disposal, economic value or cost of repair.

This stage will guide users in fulfilling their obligations by following the following processes:

Recognize and accept assets: The trigger for this particular stage is the handover stage. Verify all required documentation such as O&M manuals and as-built drawings. Walk through and assess the asset deliverables including serviceable systems and identify non-performance against asset operational requirements. Ensure that the required initial information on the new asset is captured into the infrastructure asset register.

Mobilisation for Facilities Management: Identify key staff to manage the assets well ahead of the start-up operations. Train staff who will manage facilities management contracts and services. Appoint facilities management service providers by following all procurement processes. Ensure that all facilities management services are in place and operational.

Operations: The purpose of this step is to carry out the management of the facilities including planning and budgeting and includes the following activities: Identify and establish inspection and maintenance plans as per the operating and maintenance manuals and check, test or replace asset systems, subsystems, assemblies or components, Ensure that preventative (scheduled, routine) maintenance plans are in place, Ensure that all breakdowns are being addressed immediately. Ensure that the required funds are allocated and that facilities management contracts are being placed to ensure continuation of services.

Determine the cost elements of the remaining asset life, determine cash flows for each costing element per annum and for the decided operating method.

Maintenance: attend to the implementation of the preventative maintenance plans such as instruct the maintenance service provider to implement the preventative maintenance plan, ensure records and warranty documentation for all maintenance completed, monitor performance of the service provider as per contract, and consolidate monthly maintenance activities, analyse and submit a monthly preventative maintenance report.

Demobilise Facilities Management: This stage ensure the removal of staff and shutting down selected system in prior to disposal, upgrade or refurbishments of an asset. Draw up a plan, after receipt of notification of an asset to be disposed of or to be upgraded/refurbished, and if required removal and storage of re-usable items and systems, handover of asset to Client with a stock/inventory/equipment list and condition thereof



SUPPLY CHAIN MANAGEMENT

This is the design, planning, execution, control and monitoring of supply chain work activities and services in the delivery of infrastructure and service of works. The objective of the subsystem is to create net value and provide oversight and co-ordination of information and finances within the supply chain as projects are being implemented.

Supply chain deals mostly with external processes; however, the guideline has focused on the internal processes of the client organization and this includes the following steps:

Plan: When implementing infrastructure, the client organization need to decide on the operational strategy, description of services and works to be procured and procurement method, relevant laws requirements on procurement such as PPDA. The client should weigh the benefits and disadvantages of different options of procurement methods.

Procure services or works: The client needs to look at the best option of organizing the procurement of consultants and contractors. Clients need to negotiate contracts and schedule of implementation with the selected and vetted supplier of construction services or works. Clients need to check cash flow forecast; agreed total prices or forecasted total of prices; whether or not provision is made for price adjustment for inflation, delay damages, performance bond and retention. Performance of all suppliers of services or works must be assessed.

Delivery of services or works: this stage is concerned with scheduling of implementation of the actual works and services and involves measuring the progress of a project based on the schedules, managing communication, identification and mitigation of risks involved in the project.

Acceptance: This stage involves acceptance of the provided services and works, checking defects and making good, checking if all services are working and if operational and maintenance manuals are in place.

Establish a disposal committee which shall be headed by a technical person and shall decide how best to undertake disposals of infrastructure, unwanted, redundant or surplus materials, plant and equipment. The reasons for adopting a disposal strategy shall be recorded prior to proceeding with such disposal.



INFRASTRUCTURE PROJECT TECHNICAL AUDIT

The Infrastructure Project Technical Audit Subsystem provides ways of reviewing various aspects of the project such as:

- i) Quality
- ii) Cost
- iii) adherence to standards and contract conditions as stipulated in the contract.

Objective of construction audits: The main objective of technical Audits is to enhance quality of infrastructure as there has been an outcry that most construction projects are of poor quality, have cost overrun and do not adhere to schedules.

The first step in Construction Audits is budgeting: All Client organizations should ensure that in the design and budgeting of every project, the Technical Audit is incorporated the way a budget is done for design and construction services. The industry rule of thumb is to budget of 0.05% of the construction project cost.

Engagement of a Technical auditor: The technical Audit should be carried out by well experienced persons in technical and construction contractual matters with acute sense of observations. Most organizations have the technical internal auditors whose role is at operational level, it is recommended that these Technical Audits should be carried out by external auditors. The external auditors are more objective as they are not employees and that they view the issues from a different perspective as they are not blindsided.

Establish stages or types of audits: Audits should be carried out throughout the lifecycle of the project. However, the client may carry out specific audits such as:

i) preconstruction audit which checks if there were shortfalls in the development of the project concept, design, Bills of Quantities or tender documents. The report from this audit may necessitate revisions of the same.

ii) construction phase which checks all contract documentation which is used during construction such as drawings, Quality Assurance, Quality Control, specifications, materials reports, conditions of contract and price submitted by the Contractor

iii) The Post construction audit which evaluates the entire project process from initiation to handover of the project to assess conformance with all aspects of the contract and shall recommend any further testing that is required to assess the quality of the works.

Documented lessons from the audits must be filed appropriately for use during implementation of future projects.