



Punjab Municipal Development Fund Company

Hiring of Consulting Services for Preparation of Integrated Development and Asset Management Plan (IDAMP) for 16 selected MCs In Punjab under Punjab Cities Program (PCP)

Updated Framework - Integrated Development and Asset Management Plan (IDAMP)



Private and confidential

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Program Director,

Punjab Cities Program (PCP),
Punjab Municipal Development Fund company (PMDFC),
Building No. 184 Scotch Corner, Upper Mall Scheme,
Lahore - 54500, Pakistan

Dear Sir,

Issuance of revised Updated IDAMP Framework

We, in association with our consortium member JERS Consulting Pvt Limited, are pleased to issue the revised Updated IDAMP Framework for the project "Consulting Services for Preparation of Integrated Development and Asset Management Plan (IDAMP) for 16 selected MCs in Punjab under Punjab Cities Program (PCP)".

We shall be available to discuss the contents of this report as per mutual convenience.

If you have any query regarding the subject, please contact our partner Mr. Muhammad Ali Qamar at ali.qamar@pk.ey.com or Senior Director Mr. Shahzaib Sanwal at Shahzaib.sanwal@pk.ey.com.

Yours sincerely,



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Acronyms & Abbreviations

ADP	Annual Development Program
AM	Asset Manager
AMS	Asset Management System
CO	Chief Officer
DSS	Decision Support System
GIS	Geographic Information System
GPCD	Gallon Per Capita Per day
ICT	Information and Communication Technology
IDAMP	Integrated Development & Asset Management Plan
IIMM	International Infrastructure Asset Management Manual
IRR	Internal Rate of Return
ISO	International Standardization Organization
Km	Kilometer
KPIs	Key Performance Indicators
LG&CDD	Local Government & Community Development Department
lgs	local governments
LOS	Level of Service
M&E	Monitoring & Evaluation
MCs	Municipal Committees
MIS	Management Information System
MO	Municipal Officer
MRS	Market Rates System
MTDFs	Medium-Term Development Frameworks
MU	Municipal Unit
NEQs	National Environmental Quality Standards
NPV	Net Present Value
O&M	Operation & Maintenance
OHR	Overhead Reservoir
P&C	Planning and Coordination
PCP	Punjab Cities Program
PLGA	Punjab Local Government Act 2022
PMDFC	Punjab Municipal Development Fund Company
QA	Quality Assurance
QC	Quality Control
SOPs	Standard Operating Procedures
SWM	Solid Waste Management
USEPA	United States Environmental Protection Agency

01 Introduction of Framework

Chapter 1. Introduction of Framework

1.1. Introduction

This document may be called 'Integrated Development Asset Management Plan' (IDAMP) Framework of Government of Punjab (hereinafter referred as "IDAMP Framework").

The IDAMP Framework sets out the principles/guidelines and policies for efficient and transparent asset management and reporting system. Thus, this Framework is designed to ensure the effective planning, careful management, accurate recording and reliable reporting of all the assets over the asset life cycle for optimized service delivery to the public.

1.2. Purpose of IDAMP Framework

The key purpose of IDAMP Framework is the effective management of asset portfolio of the Municipal Committees (MCs) in order to achieve service delivery objectives.

Further, IDAMP Framework is intended to achieve the following purposes:

- Encourage a consistent approach and a common methodology for development and management of assets
- Emphasize the importance of developing robust asset management plans linked to rigorous long term financial planning to help achieve the service delivery objectives
- Provide guidelines to ensure informed decision making by MCs for investment in and management of those assets which help achieve the service delivery objectives;
- Establish principles for the development of detailed Standard Operating Procedures for implementation and sustainability of IDAMP.

1.3. Scope of IDAMP Framework

IDAMP Framework is, in initial phase, applicable to the 16 Municipal Committees (MCs) of Punjab supported by the The World Bank-funded Punjab Cities Program (PCP) to strengthen the performance of MCs in urban management and municipal service delivery. These MCs are listed below:

S. No.	Northern Punjab	Central Punjab	Southern Punjab
1	Daska	Gojra	Bahawalnagar
2	Hafizabad	Jaranwala	Burewala
3	Jhelum	Jhang	Khanewal
4	Kamoke	Kamalia	Vehari
5	Muridke	Okara	KotAddu
6	Wazirabad		

Subsequently, the scope of IDAMP Framework may be extended to other Municipal committees with the authorization of Local Government and Community Development Department, Government of Punjab.

Further, this IDAMP Framework provides principles and guidance about the following arenas of asset management:

- Planning of Assets
 - Development of project proposals for rehabilitation/replacement or new assets creation
 - Appraisal of proposed projects
 - Selection of suitable projects for implementation
- Operation and maintenance (O&M) planning of assets
- Monitoring and Evaluation of implementation of IDAMP

1.4. Legal Authority of IDAMP Framework

It is the responsibility of Municipal committees to manage and develop assets within their jurisdiction, including infrastructure, buildings, land, and public resources. The multi-year planning process is guided by relevant laws, rules, and regulations to ensure the sustainable use and preservation of these assets. The process involves identifying and assessing existing assets, developing strategies for their management and maintenance, and budgeting and financing provisions.

The Local Government Act, 2022, mandates the preparation of a comprehensive local development plan and a draft annual plan that aligns with the objectives of the long-term development plan. Furthermore, The Punjab Local Governments (Budget) Rules, 2017, require the Chairman or Mayor to provide vision for long term development for the said Municipal committee.

Thus, IDAMP Framework shall provide the principles and guidelines to the MCs in the development planning and infrastructure management.

The IDAMP Framework shall be approved and officially notified by the Secretary, Local Government and Community Development Department (LG&CDD) for implementation in the MCs.

1.5. Compliance with IDAMP Framework

In order to ensure consistency and uniformity in the application of IDAMP procedures, compliance with the IDAMP Framework is mandatory. The IDAMP Framework will be reviewed on need basis and modified accordingly in order to reflect changes in the Government policies, requirement of MCs in their operating conditions or global advancement in the asset management best practices. Any amendment or update of the IDAMP Framework must be processed in accordance with amendment procedures described in forthcoming section of this chapter.

1.6. Controller of the IDAMP Framework

To ensure safe custody and maintain confidentiality, the Secretary Local Government and Community Development Department (LG&CDD) has been designated as controller of the IDAMP Framework. All inquiries and matters relating to IDAMP Framework, its language/contents, implementation, scope, objectives etc. should be addressed to the Controller of the IDAMP Framework. Controller shall also ensure that the IDAMP Framework is not distributed without business intent. Further, Controller shall be responsible for ensuring that any person, party or group who receives this IDAMP Framework is informed of the confidentiality requirement.

Printing and publishing of this IDAMP Framework shall be strictly prohibited unless specifically authorized for business purpose by the Secretary LG&CDD. In case of issuance of IDAMP Framework for other than business purposes to the authorized users, an official notification shall be issued to effect such issuance of IDAMP Framework.

1.7. Amendments to the IDAMP Framework

Any amendment (addition/ deletion/ revision/ modification) to this IDAMP Framework should be carried out as and when the need arises. Any amendment to the IDAMP Framework might be originated by the Secretary LG&CDD on their own motion or a request for amendment in any part of the IDAMP Framework can be originated by a user of the IDAMP Framework or a person in an authorized management position.

Secretary LG&CDD (controller to the IDAMP Framework) shall have the authority to approve or reject the proposed amendment against proper justification. In case of approval of the amendment, Secretary LG&CDD shall notify the approved amendment to all the users of IDAMP Framework through official notification.

Note:

For the purpose of IDAMP, the term 'Asset Manager' includes the personnel who are assigned with the custody of respective assets. Thus, Asset Manager in MCs shall be respective Municipal Officers/Chief Officer.

02 Overview of IDAMP

Chapter 2. Overview of IDAMP

2.1. Context

The World Bank-funded Punjab Cities Program (PCP) is supporting 16 MCs of Punjab with an objective to strengthen performance of the participating MCs in urban management and municipal service delivery.

MCs are facing below mentioned challenges at the moment:

- Repetitive Transition in LG System
- Institutional Fragmentation and Unclear Accountability
- Weak Systems and Capacities at MCs
- Weak MC Finances
- Low Coverage & Quality of the Municipal Services
- Poor Operation & Maintenance (O&M)
- Lack of multi-year planning for development and asset management

Due to these challenges, the strategic framework for economic development and spatial growth is weak, and spatial plans lack legal force. Development projects are not prioritized according to evidence-based priorities, and budgetary planning is largely erratic. MCs focus on smaller, more readily implementable projects at the expense of larger, more impactful civic needs. Financial management in MCs is inadequate, including budget and expenditure control, cash-flow management, and internal audit capacity.

In order to cope with these challenges, the MCs need to work towards a lucid medium-term framework which links the existing service delivery, the recurring operational and maintenance costs of the public infrastructure and the development plans to its financing strategy.

2.2. Key Concepts

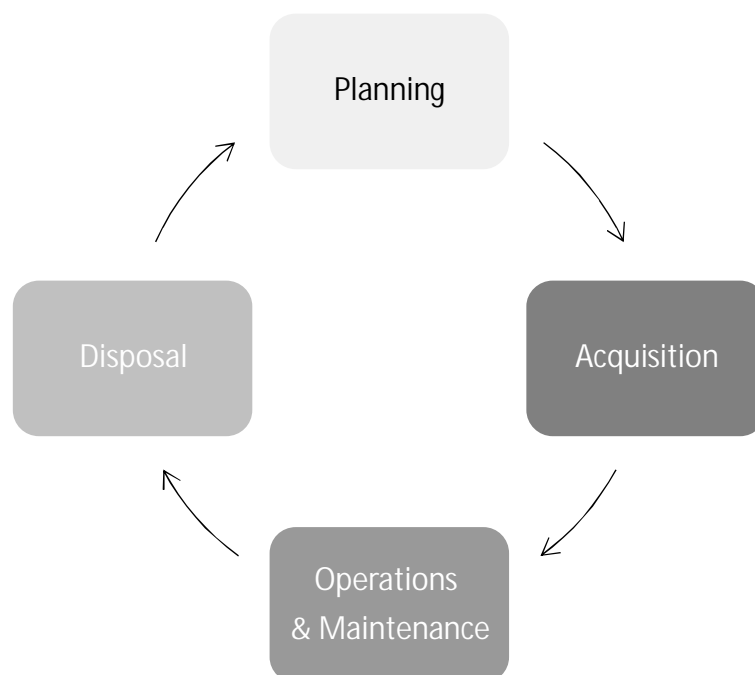
The concept of *Integrated Development & Asset Management Plan (IDAMP)* revolves around the international best practices of asset management and its enhancement for improving service delivery by the local government institutions within the available fiscal space. The processes have been derived from the well-established standards like ISO 55000 and International Infrastructure Asset Management Manual (IIIMM). The process is contextualized for Punjab Province based on the intensive discussion with the respective officials overseeing the asset management.

'Asset' is defined as "a resource with economic value that an individual, organization or country owns or controls with the expectation that it will provide future benefits". Public assets could be defined as the items or properties owned by the Government for the service delivery to the public, like those of roads, buildings, water supply and sewerage schemes, streets, libraries, etc.

In the present context, the assets will be referred as the tangible items or properties owned/used by the MCs for the achievement of service delivery objectives. Assets have been classified on the basis of their form and function in the service delivery. Classification and categorization of assets held by the MCs has been detailed in the forthcoming chapters.

Every asset is bound to have certain time period for performing its operations or providing services attributed to it from acquisition to disposal. This is referred to as *Asset Life Cycle*.

Asset Life Cycle is followed by the process of planning through which the decision of its acquisition is made. After this stage, the operational life of an asset starts during which it requires financial resources to continue its operational status under the head of 'Operations and Maintenance (O&M)'. Over the passage of time, the assets are disposed off through auction for various reasons like completion of their operational life, being unserviceable, being not cost effective, or for generating financial resources. Disposal of assets leads to the process of planning for replacement of old assets or acquisition of new assets. Asset Life Cycle is depicted below:



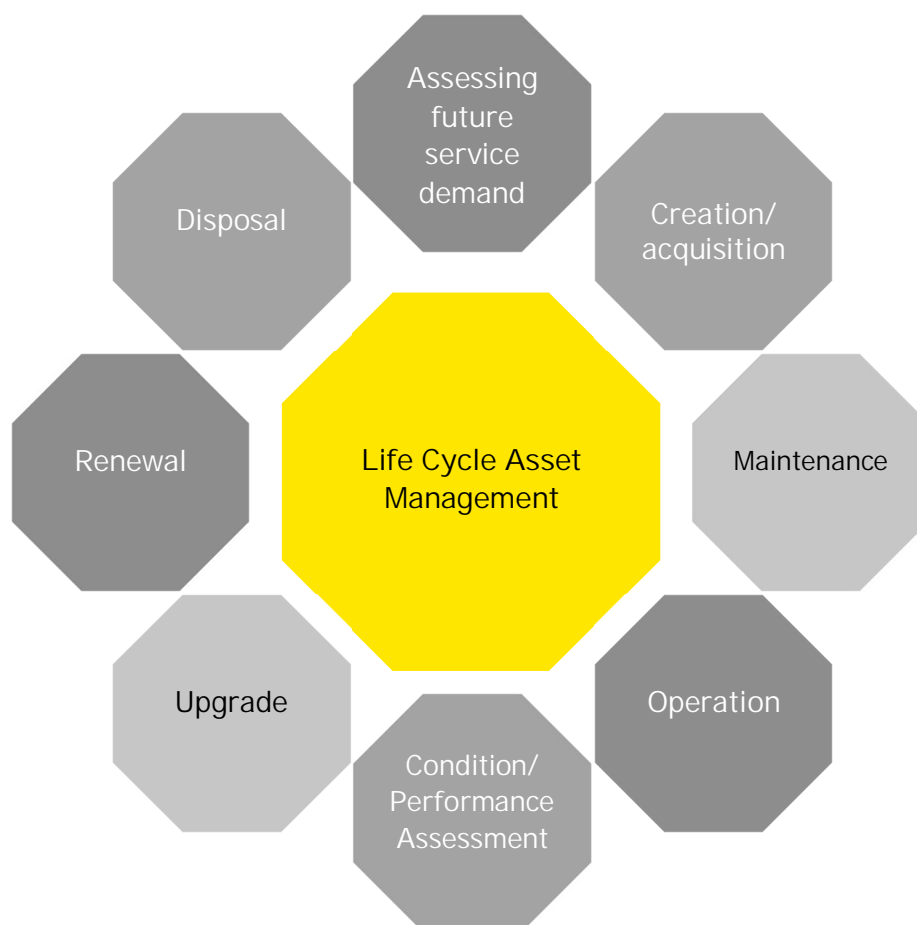
The initial cost incurred on acquisition of most of the public assets (i.e. capital cost), is generally a part of the total cost incurred during the useful life of these assets. This total cost is called the 'Life Cycle Cost'.

As a matter of fact, it has been seen that the construction cost of a facility makes up only a fraction of the total cost incurred during its 15 to 50-year useful life. This fact, nonetheless, provides a clear understanding that the capital investment is only the first and not the main cost related to Government assets.

'Asset Management' is a systematic process which allows for the maintenance, upgrading and operation of physical assets in a cost effective manner. It has been defined in ISO 55000 as "coordinated activity of an organization to realize value from assets".

Hence, 'Asset Management' is a structured process that seeks to inculcate, financial, operational and economic efficiencies from the public assets to improve and sustain their service delivery potential. Asset Management is the combination of management, financial, economic, and engineering and other practices applied to physical assets with the objective of providing the required level of service in the most cost effective manner in cities.

Asset Management is related to entire Life Cycle of an asset called Life Cycle Asset Management. After acquisition, the maintenance for operation is done continuously on the basis of assessment of performance or condition as well as for achievement of desired level of service and finally the decision of upgrading, renewal, replacement or disposal is taken.



If any new capital asset is planned to be built or purchased, managing it during its life as Government property would become a task of asset management. In addition, future operating costs should be factored into obligations for the MC operating budget.

The accounting record of assets is maintained in a 'Fixed Asset Register'. MCs shall develop their Asset Register in the Asset Management System. Fixed Asset Register shall contain the following information, at minimum:

- classification of asset
- asset identification number
- description
- date of purchase or date of completion
- original purchase cost in Rupees
- cost in foreign currency (where applicable)
- current location
- ownership of/responsibility for asset

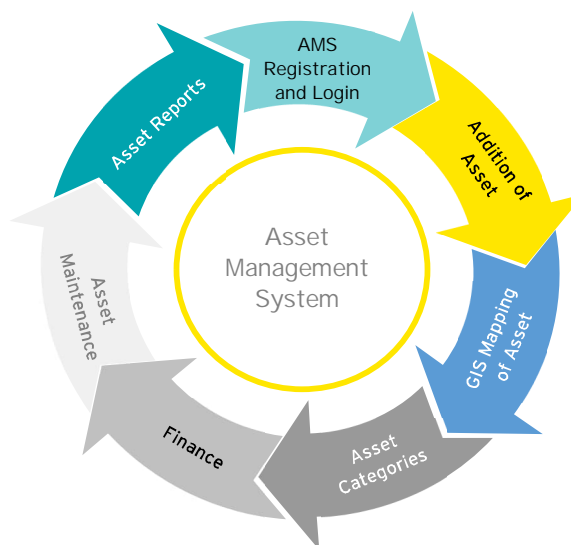
The assets are primarily designed to deliver Level of Service (LOS). LOS is the defined service quality for a particular activity, against which service performance may be measured through Key Performance Indicators (KPIs). KPIs is a set of quantifiable measures used to gauge the performance of an asset in terms of meeting the operational goals for achieving the desired Level of Service. LOS usually relates to quality, quantity, reliability, responsiveness, environmental acceptability and cost. For MCs, LOS indicators have already been identified in consultation with the officials of MCs and PMDFC. Details of LOS indicators have been provided in the forthcoming chapters.

The coordinated system for carrying out life cycle asset management in an effective and efficient manner is the one known as 'Asset Management System' (AMS).

During the recent years, after the advent of Information and Communication Technology (ICT), like many other systems, the Asset Management Systems have also been computerized and, now, it is the software, which deals with the life cycle management of assets and acts as decision support system.

The AMS or computerization of Assets is a combination of processes, data and software applied to provide the essential outputs for effective asset management such as reduced risk and optimum infrastructure investment.

A standard AMS has various components which include asset registration, asset categories, finance, asset maintenance and asset related reports.



For Entities with advanced asset management practices, all asset activities, including capital planning, originate from an Asset Management Plan, which defines long-term intentions regarding assets based on the Government's service and program needs. When an Asset Management Plan does not exist, three areas of asset management become critically important for the capital planning process and associated budgeting which include:

- Inventorying assets
- Tying capital investment to life cycle costing
- Estimating long-term repair and replacement needs for the entire asset portfolio.

It is the intention of IDAMP Framework that an Asset Management System (AMS) shall be established for the MCs with clear Asset Management Objectives, Asset Management Policy, Asset Management Performance Indicators and Asset Management Plan which will play a key role in the O&M and replacement of assets for achievement of improved Level of Services through robust planning, budgeting and effective control and management system.

2.3. Key Challenges

The issue of service delivery expectation and the actual level of service delivery represents a considerable challenge faced by government institutions in the province of Punjab. The rapid pace of urbanization, coupled with inadequate management of public sector assets, is the primary reason for the ever-widening gap between desired and actual levels of service.

MCs in Punjab are currently ill-equipped to meet the demands of their growing populations due to insufficient infrastructure and urban management capabilities. It is crucial for the province to develop a strategy that will enable its cities to become more livable while serving as drivers of economic growth. However, the present scenario indicates that the strategic framework and direction for economic development and spatial growth in cities is weak.

Even where plans have been developed, they lack legal force and are too vague to be put into action.

In regard to the gap in the service delivery, the MCs are facing following key challenges in Punjab:

2.3.1. Lack of multi-year planning for development and asset management

At present, there is a division between medium-term budgeting and development planning at the provincial level, and annual planning at the Municipal committee level, where Annual Development Programs (ADPs) are created instead of Medium-Term Development Frameworks (MTDFs). This results in a lack of medium-term prioritization for projects beyond the annual portfolio of schemes, despite the local government budget rules requiring it.

Public preferences are not taken into account in the prioritization of projects in the ADPs, leading to inconsistent and unsustainable results. Due to the absence of a coherent vision, budgetary planning and resource allocation practices suffer, resulting in erratic spending, and smaller development projects are given priority at the expense of more crucial civic needs requiring a longer-term, multi-year commitment.

2.3.2. Weak Systems and Capacities

MCs exhibit significant deficiencies in planning and management capacity, as well as in the systems required for gathering community feedback to inform the development of a comprehensive funding strategy that emphasizes asset management and leads to improved service delivery. Additionally, several aspects of financial management within these MCs are inadequate, including budget management, expenditure controls, cash flow management, management of creditors, asset and liability management, as well as weak internal audit capacity and audit controls. These shortcomings highlight the need for further improvements in governance and financial management practices in MCs.

2.3.3. Non availability of an effective asset management system

Despite the process and requirement in place by applicable laws, the asset inventory in MCs is incomplete, inconsistent and without any attributes and not available for asset management and asset improvement purposes.

The asset management system is a combination of assets register and information related to assets and its level of services for improved service delivery. The capacity constraints and absence of a well-defined system in entities, this system is minimally maintained or underdeveloped with well-defined parameters. Resultantly, asset creation and its renewal decision at MC level is not comprehensive and is not based on defined information leading to decision making leading to service delivery and asset management regime.

2.3.4. Lack of well-defined system for the prioritization of projects

The planning and budgeting exercise in practice at the entities has limited effectiveness due to absence of well-defined asset creation and development criteria linked to the service delivery. The aspect of prioritization is not linked to well define criteria, thus leading to creation and maintenance of assets which are not optimally planned and created with less contribution to the enhancement of service delivery.

2.3.5. Poor Operation & Maintenance (O&M)

The O&M regime of assets is most neglected phase of the asset management impacting the life cycle of asset and its associated service delivery leading to breakdown of assets, reduction in its life cycle and its utility linked to the service delivery. There is a need to define and develop an institutionalized O&M regime linked to the asset management system. The existing system is based on repair and maintenances after an asset is failed and no system or planning for the preventive maintenance for asset is provided. This impacts the life cycle and remaining life of the asset. The challenges outlined previously will be tackled through the implementation of an asset management system and its associated processes in cities, which will be linked to the asset life cycle.

2.4. Objectives of IDAMP

The MCs currently manage public capital assets worth billions of rupees. MCs provide various services and require capital assets that support excellent service delivery outcomes, including facilities, base infrastructure and specialist equipment. The effective management of assets is therefore an essential business process, providing the opportunity for organizational efficiencies, improved asset utilization, reduced operating costs, more effective use of capital.

An IDAMP is a key part of the asset management process. It provides a description of the overall system components, and summarizes key asset and planning information at a single point in time. Its primary purpose is to identify the financial consequences of delivering public services through physical assets, describing:

- The importance of physical assets to delivering service delivery objectives and outcomes;
- The quality of existing physical assets in terms of condition and asset performance;
- The assets needed to meet or sustain current levels of service, and to address current and future shortfalls
- The feasible asset solutions to address identified shortfalls; and
- The level of commitment and planned improvements.

2.5. Key Benefits of IDAMP

IDAMP shall enable the entities to realize value from assets in the achievement of their service delivery objectives. What constitutes value will depend on these objectives, the nature and purpose of the entities and the needs and expectations of its stakeholders. IDAMP shall support the realization of value while balancing financial, environmental and social costs, risk, quality of service and performance related to assets.

The benefits of IDAMP include, but are not limited to the following:

- Improved service delivery: Assuring the performance of assets can lead to improved service delivery that consistently meet or exceed the expectations of consumers and stakeholders;
- Improved financial performance: Improving the return on investments and reducing costs can be achieved, while preserving asset value and without sacrificing the short or long-term realization of organizational objectives

-
- Informed asset investment decisions: Enabling the MCs to improve their decision making and effectively balance costs, risks, opportunities and performance in respect of their assets
 - Managed risk: reducing financial losses, improving health and safety, good will and reputation, minimizing environmental and social impact, can result in reduced financial, social and economic risks
 - Demonstrated social responsibility: improving the entity's ability to, for example, reduce emissions, conserve resources and adapt to climate change, enables it to demonstrate socially responsible and ethical business practices and stewardship
 - Improved efficiency and effectiveness: reviewing and improving processes, procedures and asset performance shall improve efficiency and effectiveness, and the achievement of entities objectives
 - Enhanced public trust and confidence: through improved consumer satisfaction, stakeholder awareness and confidence
 - Improved organizational sustainability: effectively managing short and long-term effects, expenditures and performance, can improve the sustainability of operations and the organization

03 Policy Framework for IDAMP

Chapter 3: Policy Framework for IDAMP

3.1. Legislative Environment

There are various provisions available in the relevant laws, rules and regulations that support the asset management and integrated development and asset management planning.

The MCs are tasked with the important responsibility of managing and developing the assets within their jurisdiction. These assets, including infrastructure, buildings, land, and other public resources, are essential for the provision of essential services and the overall well-being of the communities they serve. To effectively manage and develop these assets, Municipal committees must engage in multi-year planning. This systematic and comprehensive process involves the identification, assessment, and development of strategies for the management and maintenance of their assets.

The multi-year planning process is guided by various provisions in relevant laws, rules, and regulations, which aim to ensure the sustainable use and preservation of these assets. The process begins with the identification and assessment of existing assets, taking into account factors such as their condition, usage, and remaining useful life. Based on this information, strategies for the management and maintenance of these assets are developed, including options for repair, replacement, or upgradation. The plans also include provisions for budgeting and financing, as well as measures to ensure compliance with relevant laws and regulations.

In accordance with Section 166 of the Local Government Act, 2022, the head of the Municipal committee is mandated to prepare a comprehensive local development plan for the respective local area within six months of assumption of office. The local development plan must be in compliance with the form and manner prescribed by the Secretary, and should include the following components:

- Objectives of the MC with respect to the development of the local area
- Strategies for achieving these objectives, including indicators for monitoring and measuring progress
- A resource plan outlining the financial and other resources required for the attainment of stated objectives, and an assessment of the availability of such resources to the MC.

Furthermore, the head of the MC is also required to prepare a draft annual development plan of construction or other works and activities to be carried out during a financial year, prior to the commencement of that financial year. This draft annual plan must be aligned with and contribute towards the objectives of the local development plan.

It is important to note that the Local Government Act 2022, provides the legal framework for the MC's development planning and the annual plan that aligns with the objectives of the five-year development plan for the local area. This ensures that the municipal committee has a clear and legally compliant development plan in place, and that the annual plans align with the objectives of the five years development plan for the local area.

Furthermore, The Guidelines for Planning Development Works by Local Governments under the Punjab Local Government Act, 2019, emphasize the need to identify

development proposals based on public priorities, pressing needs, capacity gaps, sustainability, cost-effectiveness, economic and social returns, and government instructions. The prioritization of new works proposals should be done over the years after consultation with the Chief Officer, members of the cabinet, and other stakeholders. The objective is to ensure equitable distribution of development benefits and dividends amongst the residents of the local area, while ensuring economic and value chain development.

According to the Rule 3 of the Punjab Local Government (Budget) Rules, 2017, the Mayor or Chairman shall give vision for long-term development, identify needs of the local area, review and define development priorities for the MC, communicate with stakeholders to assess their needs and receive their opinion on total development outlay and revenue potential of the local area, determine key performance indicators and evaluate progress against them for the purpose.

Similarly, The Punjab Local Government (Property) Rules, 2018, set out the responsibilities of MCs for the effective asset management viz. a.viz the designation of asset manager, the requirements regarding the comprehensive record management for all types of assets and the effective management of MCs' assets and the procedures for the disposal of assets.

The Manual for Development Projects, issued by the Planning Commission of Pakistan, out of which the PC-I, PC-II and other PC Forms have been derived, also supports the medium term planning (3 - 5 years) involving the compilation of public investment programmes and preparation of development budgets, external finance budget, investmentbudget.

3.2. Asset Management Framework

An asset management framework brings together the inter-relationships between key organizational planning activities and asset management, allowing the entity's strategic goals to be integrated with the asset portfolio to meet the organization's service delivery requirements. It is important for the management of an organization to understand the intent of asset management framework before embarking on an asset.

Asset management framework comprises of following key components:

- Leadership Commitment
- Asset Management Policy
- Asset Management Plans

3.2.1. Leadership Commitment

Top management is responsible for developing the asset management policy and asset management objectives and for aligning them with the organizational objectives. Leaders at all levels are involved in the planning, implementation and operation of the asset management system. Top management should create the vision and values that guide policy, practice and actively promote these values inside and outside the organization. Top management also defines the responsibilities, accountabilities and asset management objectives and strategies, which create the environment for the asset management system.

Leaders should lend their authority to supporting the asset management system and should ensure its alignment to other management systems within the organization through appropriate organizational design.

Top management and leaders at all levels are responsible for ensuring that appropriate resources are in place to support the asset management system. These resources include appropriate funding, adequate and competent human resources, and information technology support. Leaders should recognize and resolve conflicts between the internal culture of the organization and the performance of its asset management system. Top management and leaders at all levels are responsible for communicating the organization's asset management objectives and the importance of its asset management system to all employees, customers, suppliers, contractors and other stakeholders. Communication should be two-way, with leaders being opened to receiving information aimed at improving the asset management system from all levels.

3.2.2. Asset Management Policy

An Asset Management Policy outlines how the Entity's asset portfolio shall:

- Meet the service delivery needs of its communities into the future
- Enable the Asset Management Policy to be achieved
- Ensure that asset management is established as part of the entity's plan for the future.

Principles and key elements of asset management approach are:

- Evidence base planning for assets
- Consult consumers, community and stakeholders to develop LOS
- Provide the defined LOS and monitor and report performance
- Develop cost-effective management strategies for the long term
- Understand and meet the impacts of growth through demand management and infrastructure investment
- Undertake Lifecycle Cost Analysis on all asset decisions
- Undertake risk identification, assessment and control
- Use physical resources sustainably
- Ensure that a comprehensive Asset Register is maintained, and asset condition assessments are undertaken
- Ensure that sufficient and accurate information is captured in an Asset Management Information System to enable effective asset management, performance measurement and depreciation estimations
- Undertake continuous improvement in asset management practices; and
- Ensure that an infrastructure funding renewal gap is not created for future generations of customers.

3.2.3. Asset Management Plans

Asset Management plan defines current levels of service, and the processes to be used to manage each of asset classes. They should be developed for all major asset classes, including, but not limited to: Tube wells, Disposal Stations, Pipelines, filtration plants, water treatment plants, machinery and equipment, roads, buildings, parks and other infrastructure. Asset management plan should also combine the multi-disciplinary management techniques including technical and financial plan over the life cycle of the asset in the most cost-effective manner to provide required level of service delivery.

Following are the crucial sockets that need to be plugged in while formulating asset management plans:

- Review of asset structure description
- Assessment of asset current performance level
- Determination of Required Standard of Service
- Preventive maintenance plan
- Corrective maintenance plan
- SOPs for emergency replacement or break down maintenance
- Budgeting & costing of relevant activities
- Monitoring and Review of Asset Performance

3.3. Policy Framework for IDAMP

An Asset Management Policy outlines MC's asset management objectives, targets and plans. It establishes a platform for service delivery and provides a framework that enables the Asset Management Strategy and Plans to be produced. The Asset Management Policy must support a 'whole of life' and 'whole of organization' approach to asset management.

The MCs should have a focus on sustainable service delivery. The goal of asset management is to meet the required levels of service, in the most cost-effective manner, through the management of assets for present and future customers; and to demonstrate this to customers and stakeholders.

At present, the planning and development in the MCs in Punjab is being executed on annual basis, viz-a-viz, there is a wide range of diverse assets under their control for which, so far, no policy exists to manage the various stages of asset lifecycle like planning, acquisition, operation and maintenance and replacement or disposal.

As the IDAMP has its core focus on the coherence of planning, development and asset management, therefore, it is important to have a policy framework providing the guiding principles to address the inherent issues of existing system.

The salient features of the Policy Framework for the IDAMP are given as under:

- The budgeting and development planning of the entities will be shifted from annual to medium term basis.
- Asset management decisions shall be based on service delivery needs and the benefits and risks of assets, with an evaluation of alternative options that take into account of service delivery and MC's extension requirement. In this regard it is also linked with

City Master Plan, Peri-Urban Structure Plan, Population and Level of Service Delivery (LOS).

- Asset management plans are to be developed for the MC's assets as per IDAMP, and these shall be informed by community needs, and integrated with MC's financial reporting frameworks.
- Financial and asset management reporting is to be categorized in terms of operational, maintenance, renewal, upgrade and new expenditure classification to enable sound asset management decisions under IDAMP.
- After creation, the condition or structural integrity of assets will be managed by application of an appropriate lifecycle activity i.e. operations, maintenance, renewal/upgrade and disposal.
- Initially, an Asset Inventory shall be developed in a GIS based system. This inventory would provide information mainly consisting of the asset attribute data, the historical cost of the assets and the repair estimates for the previous 5 years. Subsequently, the asset information would be shifted to asset management software to develop an effective database and a reporting mechanism for the assets. In the asset management software, the concerned entities would be able to trace individual assets with their attribute data, ageing analysis, valuation, condition analysis and the geographical location of these assets. The system will be used to assess the future capital development and maintenance requirements based on the criticality, ageing and the desired level of service of these assets.

3.4. Implementation Framework

Implementation of IDAMP shall require a collaboration of many parts of the entities. This collaboration often involves the sharing of resources. Coordinating these resources and applying, verifying and improving their use should be objective of IDAMP. It should also promote awareness of IDAMP across the whole entity.

Implementation of IDAMP include the following components:

- Constitution of Technical Team
- Asset Management System and its GIS Software
- Institutional arrangements for implementation of IDAMP
- Implementation Support

3.4.1. Constitution of Technical Teams

A senior team (Technical Team) shall be notified to lead the process of IDAMP in the MCs. The composition of Technical Team for MCs is given below which will be notified by the competent authority:

▪ Chairman/ Administrator	Convener
▪ Chief Officer	Member
▪ Municipal Officer Finance	Member
▪ Municipal Officer Regulation	Member/ Secretary
▪ Municipal Officer Infrastructure and Services	Member

The Terms of Reference of the Technical Team shall be as follow:

- Plan for the IDAM adoption and implementation
- Plan for developing and implementing the asset inventory
- Selection of proposed projects based on the prescribed criteria
- Recommendation of the phasing of the selected projects for execution
- Provide technical, financial and management support to the asset managers
- Monitoring of the activities relevant to IDAMP
- Timely execution of IDAMP activities

3.4.2. Implementation Support

Local Government and Community Development Department shall provide support in the capacity building measures for the MCs. This would involve regular trainings and system improvements designed to match the requirements of the users.

Standard Operating Procedures (SOPs) Manual shall be designed to enable the MCs in implementation of IDAMP. The SOPs Manual shall be notified by the Local Government and Community Development Department. The main objective of the SOPs Manual is to standardize and document organizational system and procedures. SOPs Manuals are intended to provide management with a tool for effective internal control over its functions/ processes and to ensure that management objectives of smooth and efficient conduct of its operations are being achieved. The SOPs shall prescribe, in detail, the following:

- Procedures: Procedures for functions/ processes for the development of IDAMP
- Responsibilities: Specific duties to be performed by officials identified in functions/ processes
- Reporting: Reporting responsibilities, guidelines and frequency of reporting
- Specimen Reports/ Documents/ Registers: Reports/ Documents/ Registers to be used by the officials.

04 Asset Portfolio Analysis

Chapter 4: Asset Portfolio Analysis

Asset portfolio analysis plays a key role in an asset management system. Without the knowledge of existing asset conditions and associated risks, any planning regarding asset management shall not be successful. Asset base analysis comprises of two basic elements namely:

- Asset Condition Assessment
- Asset Risk Management

4.1. Asset Condition Assessment

Asset physical condition reflects the physical state of the asset which may or may not affect its performance. It is imperative for an organization to have a clear picture of the physical condition of their assets and their current level of service. All management decisions regarding maintenance, rehabilitation and renewal revolve around these two aspects. Oblivion to the current asset condition may lead to the premature failure. Asset physical condition analysis is used to determine the need and timing of some preventative or remedial maintenance to ensure desired Level of Service and prevent service breakdown.

Following factors contribute to the overall condition of an asset:

- Its age
- Its operating environment (what weather etc. it is exposed to)
- Its apparent wear and tear
- Asset’s performance
- Asset’s contribution to service delivery

According to USEPA; Asset condition can be analyzed by using the following methodology. Based on condition assessments survey carried out by Muniap Officer – Infrastructure and Services (hereinafter referred as the “Asset Manager”) score from 01 - 05 shall be awarded by the Asset Managers for each factor. Asset condition can be specified using the following scales:

1. Physical Condition

<i>Physical Condition</i>	New/ Excellent Condition	Minor Defects Only	Moderate Deterioration	Significant Deterioration	Unserviceable
<i>Score</i>	1	2	3	4	5

2. Asset Performance (KPIs)

<i>Performance (KPIs)</i>	Meets Performance Targets	Minor Performance Deficiencies	Considerable Performance Deficiencies	Major Performance Deficiencies	Doesn’t Meet Performance Targets
<i>Score</i>	1	2	3	4	5

3. Asset reliability

Reliability	As Specified by Manufacturer	Random Breakdown	Occasional Breakdown	Periodic Breakdown	Continuous Breakdown
Score	1	2	3	4	5

Asset Condition Rating

An average score shall than be calculated by the department technical team and final score shall be awarded on the basis of average score of all the factors.

Average Score	1	2	3	4	5
Asset Condition	Excellent	Good	Fair	Poor	Failing
Category	A	B	C	D	E

Average figures may be rounded off to the nearest whole number for convenience

Action on the basis of Condition Assessment:

Category	Asset Condition	Actions Required
A	Excellent	Routine maintenance
B	Good	Minor repair
C	Fair	Major repair
D	Poor	Rehabilitation
E	Failing	Replacement

4.2. Asset Risk Management

Risk is defined by ISO 55000-Asset Management as "effect of uncertainty on objective". Risk is a situation involving exposure to danger or possibility of loss. The risk related to physical assets is called Asset Failure risk. Simply put, it means that assets have inherent risks or the potential for failure. These risks must, therefore, be clearly understood and managed to ensure cost-effective service delivery.

Asset Risk management comprises of three components:

- Risk identification
- Risk Assessment

- Risk Control

4.2.1. Risk Identification

It is the process of identifying each and every situation that can cause asset failure. All the vulnerabilities inherent in the physical assets as well as the contributing factors that may trigger and enhance the vulnerabilities should be duly noted.

4.2.2. Risk Assessment

ISO 55002 states that *" the organization should determine the actions that are necessary for addressing risks when planning for its asset management system. The overall purpose is to understand the cause, effect and likelihood of adverse events occurring, to manage such risks to an acceptable level, and to provide an audit trail for the management of risks. The intent is for the organization to ensure that the asset management system achieves its objectives, prevents or reduces undesired effects, identifies opportunities, and achieves continual improvement"*.

When addressing risks in the asset management system, the organization should determine the risk assessment criteria (e.g. likelihood and consequence, and risk attitude) within asset management decision making for its asset management system. A risk matrix may be used as part of this process.

For every risk there are some conditions or vulnerabilities that give rise to such risk. These vulnerabilities are called the risk factors/ contributing factors. The greatest risk associated with Asset Management is "Asset Failure Risk". There are two basic factors that determine the magnitude of Asset Failure Risk:

- Probability (likelihood) of Asset Failure
- Impact of Asset Failure

1. Probability of Asset Failure

The Probability of asset breakdown can be defined as the likelihood that the asset will fail. Asset breakdown does not necessarily mean that an asset is faulty and has stopped working; it can also mean that the asset is not contributing to the service delivery as it should.

Following factors can be analyzed to predict the probability of Asset Failure:

- Asset Condition
- Asset Effective Age
- Past Failure history

Combined with the asset condition, asset probability of failure can be calculated according to the following scales

Condition	A	B	C	D	F
Probability of Failure	Very Low	Low	Medium	High	Very High
Probability of Failure Rating	1	2	3	4	5

2. Impact of Asset Failure

Impact of the asset failure means the gravity of damage failure of said asset would do to service delivery. The larger the affect to service delivery the more impact it has. Thus, assets can be categorized into two broader categories in respect of the impact, namely:

- Critical Assets
- Non-critical assets

Critical assets are those assets which are essential for the service delivery and their failure may have severe impact on the business. Failure of a critical asset will adversely affect delivery of service if not bring it to a halt. It should be kept in mind that critical assets are those that have adverse consequences of failure but not necessarily a high probability of failure. It is important to identify critical assets, to target and refine maintenance plans, capital expenditure plans, and investigative activities at the critical areas.

Potential consequences of asset failure are assessed against 5 key strategy elements:

- Service Delivery – Asset’s is not performing well
- Environment - damage to the environment
- Customer - disruption of the customer/community
- Efficiency- costs associated with the failure
- Culture – potential for injury or damage when repairing a failed asset

Based on the aforementioned potential impacts/ consequences associated with the failure of asset, Impact of an asset to the service delivery can be assigned using the following scale.

<i>Impact</i>	Total System Failure	Facility/ Sub-Division Failure	Asset Failure	Major Component Failure	Minor Component Failure
<i>Scale Value</i>	5	4	3	2	1

Risk Rating

The overall risk depends on both the probability and consequence of the event. As mentioned above, the overall asset failure risk depends upon the Probability of asset failure and Impact of Asset Failure (Asset Criticality)

Thus asset failure risk is the product of probability rating and the impact rating. Thus, asset failure risk can be categorized into following ratings:

- Low Risk
- Moderate Risk
- High Risk
- Significant Risk

Calculation steps for risk rating are shown in the following table:

Probability	Impact (criticality assessment)				
	1	2	3	4	5
1	Low Risk	Low Risk	Low Risk	Moderate Risk	High Risk
2	Low Risk	Low Risk	Moderate Risk	High Risk	High Risk
3	Low Risk	Moderate Risk	High Risk	High Risk	Significant Risk
4	Moderate Risk	High Risk	High Risk	Significant Risk	Significant Risk
5	High Risk	High Risk	Significant Risk	Significant Risk	Significant Risk

Risk Control

In order to plan asset management in light of the Physical Condition and assessed Asset Failure Risks the following matrix may be used to identify action plan for asset management.

Condition	Failure Risk State			
	<i>Low</i>	<i>Moderate</i>	<i>High</i>	<i>Significant</i>
<i>A</i>	Regular Maintenance	Regular Maintenance	Preventive Maintenance	Priority Maintenance
<i>B</i>	Regular Maintenance	Preventive Maintenance	Priority Maintenance	Priority Maintenance
<i>C</i>	Preventive Maintenance	Priority Maintenance	Priority Maintenance	Immediate Replacement
<i>D</i>	Priority Maintenance	Priority Replacement	Immediate Replacement	Immediate Replacement
<i>E</i>	Priority Replacement	Immediate Replacement	Immediate Replacement	Immediate Replacement

- Assets that require “immediate Replacement” should be top priority
- Assets that require “Priority Replacement” should be replaced if resources allow
- Assets that require Preventive maintenance should be carefully monitored to prevent the need for their replacement
- Assets that require regular maintenance does not pose a risk and can be operated with regular maintenance schedule.

05 Methodology for IDAMP

Chapter 5. Methodology for the IDAMP

The methodology/processes for the preparation of Integrated Development and Asset Management Plan (IDAMP) consist of following steps:

Step 1: Development of GIS based Assets Inventory

Step 2: Notification of Level of Service (LOS)

Step 3: Development of Project Proposals

Step 4: Operations and Maintenance (O&M) Costs Planning

Step 5: Financial Capacity Analysis

Step 6: Projects Screening and Phasing

Step 7: Finalization of Integrated Development and Asset Management Plan

5.1. Development of GIS based Asset Inventory

The existence of a GIS based inventory of assets is one of the most important enablers for developing an integrated approach to Asset Management. This involves the collection and updation of asset attributed data and the physical location mapping of the assets in the system.

In the context of IDAMP, initially an asset inventory of existing assets shall be developed in the Asset Management System (AMS). Subsequently, asset attribute data and physical location of replaced and new assets shall be updated in the AMS on the basis of IDAMP.

The stages for initial development of asset inventory are broadly listed as under:

- Identification of asset categories
- Collection of asset attribute data
- Development of asset inventory in AMS

5.1.1. Identification of Asset Categories

Assets of the MCs shall be categorized and grouped on the basis of similar characteristics and utilization. Initially, assets having significant importance in service delivery shall be classified into following categories:

- Tube well
- Water Supply Network
- OHR
- Filtration Plant
- Sewerage Network
- Disposal Station
- Solid Waste Dumping site
- Roads and Streets
- Streetlights
- Parks, Playgrounds and Open Spaces
- Bus Stand
- Library
- Slaughter House
- Graveyard
- Shop
- Buildings
- Vehilces
- Other Machinery and Equipment

5.1.2. Collection of Asset Attribute Data

For the development of GIS based asset inventory, asset attribute data shall be collected by the MCs. This is the first step leading towards the Integrated Development and Asset Management Plan.

Initially, existing assets data shall be collected through survey forms. For this purpose, a survey form shall be designed for each category of asset for the respective MCs. The Forms shall be filled out by the Asset Managers in the concerned MCs. The asset attribute data, at minimum, shall include the following information in respect of each asset:

- Asset Number
- Asset Description and Specification
- Asset Location and Custodian
- Asset Acquisition Year and Cost
- Asset Present Condition and Risk
- Asset Residual Life

5.1.3. Asset Portfolio Analysis

The assets shall be categorized as per condition, assets performance, age, level of service, failure history and risk associated with failure as per criteria prescribed in the 'Chapter 04: Asset Portfolio Analysis'.

5.1.4. Updating the Asset Inventory in AMS

A GIS based Asset Management System (AMS) shall be developed for the MCs. The entire assets shall be recorded and mapped in the AMS as per their attributes and location in line with the requirement of IDAMP.

Asset inventory in AMS shall be created by the Asset Managers on the basis of asset attributed data collected through the survey forms. In order to determine the GIS location of assets, a separate android based survey shall be conducted.

5.2. Notification of Level of Services (LOS)

Assets shall be planned and managed for the desired service delivery to the consumers. For this purpose, an asset divergence analysis shall be undertaken to determine if the existing assets inventory is suitable for optimal delivery of the service delivery requirements that the assets are intended to support. The activities that would usually be undertaken in the analysis are:

- Identify Current Level of Services – identify the current level of service being delivered by the existing assets
- Set Target Level of Services – ascertain the target level of service to meet the service delivery requirements
- Ascertain the Service Delivery Gap – assess the gap in the existing level of service and target level of service
- Evaluate Asset Performance Indicators – determine if the existing asset portfolio meets the existing service delivery requirements and is capable to meet the service delivery gap
- Planning for the Assets – In case existing assets are not sufficient to meet the target service delivery requirements, asset planning shall be undertaken in respect of rehabilitation of existing assets or creation of new assets.

The MCs shall design the LOS indicators for the respective services. Further, existing LOS shall be computed and target LOS shall be established for the next three years. Target LOS shall be used as key performance indicators to assess the performance of assets and monitor the extent of service delivery by the MCs. This output based approach shall allow MCs to manage the asset as per the design and LOS requirement consistent with the MC requirements with regards to service delivery.

Below is an extensive list of level of service indicators and KPI for service delivery. The MCs shall consider phasing out the adoption of these indicators and KPIs in alignment with their current state and keeping in view the existence of requisite enablers / pre-requisites:

Functions of MCs	Level of Service Indicators	Description
Water supply and control and development of water sources;	Water Supply Coverage %	Percentage of area, where water supply network is available in comparison to total built up area.
	Water production GPCD	Total daily water supplied to the distribution system (ex-treatment plant and including purchased water, if any) expressed by population served per day.
	Metered water consumption GPCD	Total annual metered water consumed expressed by metered population served per day.
	Unaccounted for water %	Difference between total water produced (ex-treatment plant) and total water consumed (which is water sold plus free supplies) expressed as a percentage of total water produced.
	Non-revenue water %	Difference between total water produced (ex - treatment plant) and total water sold expressed as a percentage of total water produced.
	Proportion of functional meters %	Total number of water connections with functional/operating meters expressed as a

Functions of MCs	Level of Service Indicators	Description
		percentage of total number of metered water connections.
	Metered water supply %	Volume of water sold that is metered expressed as a percentage of total volume of water sold.
	Pipe breaks (Leakages/Breaks /Km)	Total number of pipe leakages/breaks per year expressed per km of the water distribution network.
	Unit operational cost - water sold (production cost at consumer end)	Total annual operating expenses divided by the total annual volume of water sold.
	Unit operational cost - water produced (gross production cost)	Total annual operating expenses divided by the total annual water of water produced.
	Water supply staff per 1000 water connections	Total number of water supply staff expressed as per thousand water connections.
	Salary cost as proportion of Operating costs	Total annual salary costs (including salaries, wages, pensions, other benefits, etc.) Expressed as a percentage of total annual operating costs.
	Power and Electricity Costs as proportion of Operating Costs	Total annual power/electricity costs of the utility expressed as a percentage of total annual operating costs.
	Unfit water samples % (not conforming with the requirements of NEQ)	Total number of unfit water samples expressed as a percentage of total samples taken.
	Continuity of Service Hrs. / Day Average hours of service per day for water supply.	Average hours of service per day for water supply. (Average operational hours of tubewell per day)
	Water Supply Complaints %	Total number of water supply complaints per year expressed as a percentage of the total number of water supply connections.
	Revenue/ Billing Complaints %	Total number of revenue or billing complaints expressed as a percentage of total water and wastewater connections
	Collection Period (months)	Year-end accounts receivable/Total annual operating revenues expressed in months equivalent of sales.
	Billing Efficiency %	Total no. of bills issued and delivered at door step expressed as a percentage of Total connections (water +waste water).
	Collection Efficiency (Physical) %	Total number of bills paid expressed as percentage of total number of bills issued.
	Collection Efficiency (Financial) %	Total amount of bills received expressed as a percentage of total amount of bills issued.
	Operational cost coverage (Ratio)	Total annual operational revenues/Total annual operating cost.

Functions of MCs	Level of Service Indicators	Description
Sewerage and sewage treatment and disposal;	Sewerage Coverage %	Population with sewerage services (direct service connection) as a percentage of the total population. (Total served area as a percentage of the total built up area)
	Risk of crown failure	Whether there is an indication of crown failure?
	Sewerage blockages (Blockages/KM)	Total number of blockages/ complaints per year expressed per km of sewers
	Sewerage staff per 1000 sewerage connections	Total number of sewerage staff expressed as per thousand sewerage connections
	Waste water Treatment - Primary (%)	Proportion of collected sewage that receives primary treatment only, i.e. involving settlement with the intention of removing solids, but not biological treatment. Both lagoon and mechanical treatment can be included, where appropriate.
	Waste water Treatment - Secondary (%)	Proportion of collected sewage that receives at least secondary treatment, i.e. removing oxygen demand as well as solids, normally biological. Both lagoon and mechanical treatment can be included, where appropriate.
	Sewerage Complaints (%)	Total number of sewerage complaints per year expressed as a percentage of the total number of sewerage connections.
Storm water drainage;	Storm water drainage coverage (%)	The percentage of MC area that the drainage system protects from flooding.
Sanitation and solid waste collection and disposal of solid wastes, treatment and disposal including landfill site and recycling plants;	Collection efficiency (%)	Total amount of solid waste collected expressed as a percentage of total solid waste produced.
	Disposal efficiency (%)	Total amount of solid waste disposed off expressed as a percentage of total solid waste collected.
	Door-to-door	Percentage of area with door-to-door solid waste collection.
	Primary SWM Coverage each day in localities	Percentage of area from which the sanitary staff sweeps & collects waste each day
	Primary SWM Coverage each day in Roads	Primary SWM Coverage each day in Roads
	Private Sector Primary Collection	Private Sector Primary Collection
	Open Collection Points	Open Collection Points
	Secondary collection machinery	Secondary collection machinery
	Adequacy of parking facilities for SWM vehicles	Adequacy of parking facilities for SWM vehicles
	Waste transported in covered vehicles	Waste transported in covered vehicles
	Private Sector involved in Secondary Collection	Private Sector involved in Secondary Collection

Functions of MCs	Level of Service Indicators	Description
	Sufficiency of existing dumping area (Landfill site).	Sufficiency of existing dumping area (Landfill site).
	Mechanism for Final Disposal	Mechanism for Final Disposal
Roads and streets;	Roads with condition "A" (Excellent) %	Total number of roads with condition "A" expressed as a percentage of total roads.
	Roads with condition "B" (Good) %	Total number of roads with condition "B" expressed as a percentage of total roads.
	Roads with condition "C" (Fair) %	Total number of roads with condition "C" expressed as a percentage of total roads.
	Roads with condition "D" (Poor) %	Total number of roads with condition "D" expressed as a percentage of total roads.
	Roads with condition "E" (Failing) %	Total number of roads with condition "F" expressed as a percentage of total roads.
Public transport and construction of express ways, fly-overs, bridges, roads, under passes, traffic planning, engineering and management including traffic signaling systems, signs on roads, street markings.	Traffic signals coverage.	Traffic signals expressed as number of congestion points in the MC.
	Functioning traffic signals %	Total number of functioning traffic signals expressed as a percentage of total number of traffic signals.
	Road signage %	Percentage of signage on roads.
Firefighting;	Firefighting Coverage %	Firefighting Coverage %
	Available water storage capacity	Available water storage capacity
Streetlighting;	Streetlight coverage. (%)	Percentage of area/roads with streetlights.
	Working Streetlight %	Percentage of working streetlights as of total streetlights.
Parks, Playgrounds, Open spaces;	Open spaces as percentage of total MC area. %	Open spaces as percentage of total MC area. %
	Playgrounds as percentage of total MC area. %	Playgrounds as percentage of total MC area. %
	Parks with condition "A" (Excellent) %	Total area of parks with condition "A" expressed as a percentage of total area of parks.

Functions of MCs	Level of Service Indicators	Description
	Parks with condition "B" (Good) %	Total area of parks with condition "B" expressed as a percentage of total area of parks.
	Parks with condition "C" (Fair) %	Total area of parks with condition "C" expressed as a percentage of total area of parks.
	Parks with condition "D" (Poor) %	Total area of parks with condition "D" expressed as a percentage of total area of parks.
	Parks with condition "E" (Failing) %	Total area of parks with condition "E" expressed as a percentage of total area of parks.
	Parks as percentage of total MC area. %	Parks as percentage of total MC area. %
Graveyards;	Graveyards as percentage of total MC area. %	Graveyards as percentage of total MC area. %
	Graveyards with condition "A" (Excellent) %	Total area of graveyards with condition "A" expressed as a percentage of total area of graveyards.
	Graveyards with condition "B" (Good) %	Total area of graveyards with condition "B" expressed as a percentage of total area of graveyards.
	Graveyards with condition "C" (Fair) %	Total area of graveyards with condition "C" expressed as a percentage of total area of graveyards.
	Graveyards with condition "D" (Poor) %	Total area of graveyards with condition "D" expressed as a percentage of total area of graveyards.
	Graveyards with condition "E" (Failing) %	Total area of graveyards with condition "E" expressed as a percentage of total area of graveyards.
Transport stations, stops, stands and terminals;	Ratio of bus stations to the total length of roads	Ratio of bus stations to the total length of roads
	Adequacy of facilities at bus stands	Adequacy of facilities at bus stands
Slaughterhouses;	Adequacy of slaughterhouses	Adequacy of slaughterhouses keeping in view the population of the MC
	Adequacy of facilities in slaughterhouses	Adequacy of facilities in slaughterhouses in terms of tools, disinfectants, refrigeration/ storage systems, drainage and disposal facility, etc.
Municipal libraries;	Total number of Libraries per 100,000 persons	Total number of Libraries per 100,000 persons
	Adequacy of facilities in library	Adequacy of facilities in library in terms of books, computers, furniture, air-conditioning, lighting, drinking water etc.

5.3. Development of Project Proposal

After having completed and updated existing Inventory record and performance targets, Asset Managers shall assess the necessary decisions and steps required to be undertaken to achieve the performance targets. In order to fulfill the service delivery gap between existing LOS and target LOS, Asset Manager shall identify projects to be implemented to achieve the target LOS and formulate the project proposals.

Formulation of project proposals shall cover the following activities:

- Projects identification
- Preparation of projects
- Project appraisal

5.3.1. Projects Identification

Projects shall be identified by the Asset Managers in consultation with the local body representatives. While carrying out the identification of projects, Asset Managers shall conduct community consultation surveys to identify the community aspirations towards existing service quality and required service quality. The results of such consultations shall assist the Asset Managers in identification of most desirable areas for service improvements.

Identified projects shall broadly be classified into following categories:

- Rehabilitation/Replacement of Existing Assets
- Creation of New Assets

Replacement of existing assets

Asset inventory shall provide the basis of the input for all existing assets and conditions of assets which are linked to their level of service delivery. The concerned Asset Managers shall identify category-wise list of assets for Replacements /Rehabilitation.

Existing assets having significant contribution in the service delivery shall be included in the proposed list on following basis:

- Assets have reached to its replacement year; and/ or
- Assets have condition rating D (poor) & F (failing); and/or
- Assets have High risk of failure
- There are regulatory/ statutory directions to replace the asset.

Creation of New Assets

The requirement of service delivery enhancement based on the growing needs of population, development interventions and extension in services in extended boundary of MC requires planning for the new assets to be integrated with the existing network of assets and systems.

The new asset shall be planned by the concerned Asset Managers after considering the needs in their operational area. Asset Managers shall separately include the new projects in the list of proposed projects.

5.3.2. Preparation of Projects

Having identified the type of projects (replacement/ new), Asset Managers shall prepare projects for the appraisal. While preparation of projects, Asset Manager shall conduct the physical survey of proposed asset/ site/facility. This will assist the Asset Manager in identification of complete aspects of asset/ facilities for project preparation.

Project preparation shall include the following activities:

- Preparation of technical design or project technical specifications
- Rough cost estimation of the projects on following basis:
 - Latest Market Rate System (MRS) rates
 - The cost of non-MRS items shall be based on an open market quotation
- Operation and maintenance (O&M) costing of proposed projects

5.3.3. Project Appraisal

After the preparation of projects, project appraisal shall be performed by the Asset Managers for the identified projects. The rationale behind the project appraisal is to identify the yardsticks for the selection/rejection of projects from among competing alternative proposals for investment.

Project appraisals estimate the net benefits of a project and for a project to benefit the economy, it must be financially sustainable.

While performing the project appraisal, following techniques shall be employed:

- Net Present Value (NPV): NPV is the difference between the present value of cash inflows and the present value of cash outflows
- Internal Rate of return (IRR): IRR is a metric used in capital budgeting, measuring the profitability of potential investments. Internal rate of return is a discount rate that makes the net present value of all cash flows from a particular project equal to zero.
- Cost benefit analysis: to determine the ratio of cumulative benefits versus cumulative cost of each project over its useful life.

5.4. Operation & Maintenance (O&M) Costs Planning

The operation and maintenance (O&M) costs shall be computed for all the assets by the respective Asset Managers. The O&M costs shall be bifurcated into following sections:

- O&M costs of existing assets without considering the proposed projects (replacement/ new)
- O&M costs after considering the screened projects (replacement/ new)

Thus, total O&M cost for the assets is computed to arrive at estimated O&M costs for upcoming years by considering the selection/ rejection of screened projects. For instance, if a screened project is not selected by the Technical Team or it is phased in different year, the cost computed for the existing asset may be used for O&M budgeting process. Further, the MCs shall prepare an Asset Management Plan. The AMP shall include a detailed O&M plan in respect of all the assets. The O&M plan shall contain the schedule of activities for the effective operationalization and maintenance of all the assets held by the entity.

5.5. Financial Capacity Analysis

Potential financial sources shall be analyzed to finance capital investments. The capital investment funds available to MC may result from:

Local capital revenues: These include revenues generated only once, e.g. from selling a property that is owned by the MC, and not needed for public use. Also, included here are incomes generated from renting of own properties or assets for use to public interest.

Planned operating surplus (balance): This is the net operating surplus calculated as the balance (difference) between MCs operating revenues and operating expenditures.

Provincial Government transfers: This foresees the transfer from provincial Government coming either in the form of conditional grant for investments or unconditional grant, which can be used for capital investments.

Donor Grants: This comprises all incomes for which the MCs are assured they will be raised from donors, by clearly identifying the donor, fund, their requests and the year.

This estimation would guide the Technical Team for final decision regarding selection and phasing of projects.

5.6. Project Screening & Phasing

Once the potential financial sources have been analyzed, the project package shall be presented to Technical Team for screening and phasing of the projects over three years.

For this purpose, a five element screening & phasing criteria shall be applied for assessment of projects on the following attributes for replacement of project assets and/ or development of new assets:

- **Project Purpose:** This criterion provides purpose and relevance of the asset to the integrated planning/master plan and how the said project is connected to overall betterment of the system and service delivery. It tries to identify projects of strategic importance for the development of the locality, so it factors in the consequences of delaying the project and the status of the existing services.
- **Public Response:** This composite index gives public desirability of the project from the perspective of service delivery improvement as per different user groups and stakeholders in society. It looks into the political support and whether there has been articulated positive or negative response from resident groups, NGO's or the public at large
- **Environmental Impact:** This considers the improvements contributed by the project in the environment. This exercise will screen and assign the marks according to environmental impacts (positive, neutral or negative) of projects/assets.
- **Socio-Economic Impact:** This criterion considers the economic benefits from this project in the long term, e.g. employment creation, investment generation, increase in land/property prices, reduction in citizens' expenditures, etc.
- **Feasibility of Implementation:** This criterion assesses the practicality of implementation of the project.

Technical Team shall evaluate the proposed projects against following factors and score to each project:

Index	Question	Index Weight	Question Weight	Sub Weight	Possible Responses
1. Project Purpose & Service Delivery Improvement					
1.1	Does the project fill a gap in a wider system of service delivery?	30	10	2.5	Minor contribution
				7.5	Major contribution
				10	Significant contribution
1.2	Whether the project will contribute to Sectoral Plan / City Master Plan?		10	0	No contribution.
				2.5	Indirect contribution.
				7.5	Minor direct contribution
1.3	Whether the deference/ delay of the project is going to affect citizens' health, safety, property, prosperity etc.?		10	10	Major contribution to key development goal.
				0	No consequences
				2.5	Minor consequences
				7.5	Major future consequences
				10	Major immediate consequences
2. Public Response					
2.1	Population served by the project.	15	7.5	1	Less than 10%
				5	Between 10% to 20%
				7.5	Greater than 20%
2.2	Is there support or opposition for the project from NGO's, community groups, network, media or business organizations?		5	0	Majority opposition
				1	Minority opposition
				5	Majority support
2.3	Is there support or opposition from residents in the immediate vicinity of the new facility?		2.5	2.5	Minority support
				0	Majority opposition
				0.5	Minority opposition
				2.5	Majority support
				1.5	Minority support
3. Environmental Impact					
3.1	The impact of the proposed project on the quality of local environment (e.g. Air quality, Water pollution, Waste reduction, etc.	10	10	0	Negative effects on quality of the local environment
				5	Neutral
				10	Positive effects on the quality of the local environment
4. Socio-Economic Impact					
4.1	Will the project bring in direct revenue?	15	7.5	0	No direct revenue
				2.5	Direct revenue is not sufficient to meet O&M costs
				5	Revenue meets O&M costs
				7.5	Revenue exceeds O&M costs
4.2	Are there indirect economic benefits from this project in the long term, e.g. employment creation, investment generation, increase in		7.5	0	Negative impact on the local economy
				2.5	Little or no long term economic development benefits
				5	Additional investment in the area and increased wealth for citizens

Index	Question	Index Weight	Question Weight	Sub Weight	Possible Responses
	land/property prices, reduction in citizens' expenditures, etc.?			7.5	Significant competitive advantage to industry and boost to the local economy
5. Ease of Implementation					
5.1	Has land been acquired for the project (If required)?	30	10	10	Yes
				0	No
5.2	Has funding been secured/allocated within the local government budget or whether the external sources of funding have been secured?		5	5	Yes
				0	No
5.3	Will the project get approval from higher levels of Government?		5	1	Difficult
				5	Standard
				10	Easy
5.4	Ease of implementation of project in respect of technical design?		5	1	Difficult
				5	Standard
				10	Easy
5.5	Is there a capable system in place to implement and operate this project or is external support needed?		5	2.5	Outside expertise needed for construction, O&M
				5	Outside expertise needed for construction phase only
				7.5	Outside expertise needed for preparation phase i.e. feasibility studies
		10		No outside expertise needed	

The Technical Team shall phase out the project over the three year period keeping in view the marks obtained by the projects and the availability of finances.

5.7. Finalization of Integrated Development and Asset Management Plan

The screened and phased projects shall be compiled to develop the Integrated Development and Asset Management Plan in the form of a single book. This budget book shall include the budgeted development expenditures and associated non development expenditures.

Once the Integrated Development and Asset Management Plan has been compiled, capital investment plan shall be prepared and each individual project shall be marked with a source of fund from which it shall be financed.

06 Monitoring & Evaluation of IDAMP

Chapter 06: Monitoring and Evaluation of IDAMP

Each MC shall develop processes to provide for the measurement, monitoring, analysis and evaluation of the MC's assets, asset management system and asset management activities. In the development of these processes, the following should be taken into account:

- Setting of performance metrics and associated indicators
- Confirmation of compliance with the requirement
- Examination of historical evidence
- The use of documented information to facilitate subsequent corrective actions and decision making

6.1. Establishment of Planning and Coordination (P&C) Unit

A Planning and Coordination (P&C) Unit shall be established for continuous monitoring of implementation and compliance of the IDAMP.

P&C unit will be headed by a committee of the two members of the house (nominated by the Chairman).

The Municipal Officer (Planning) will report regularly to the committee on the M&E of IDAMP activities, identifying areas for improvement, and recommending appropriate corrective actions where necessary.

6.2. Term of References for P&C Unit

The P&C Unit shall have the following responsibilities:

- Ensure that Asset Management System (AMS) is updated in all aspects
- Carry out monitoring of:
 - Levels of services
 - Performance of an asset, including financial and non-financial performance
 - The effectiveness of the asset management system
- P&C Unit shall receive and evaluate the following reports from the entity and Asset Managers:
 - Report on Key Performance Indicators (Target vs Achieved)
 - Report on projects implementation status
 - Report on any hindrance observed while implementing the project
- Evaluation of projects implemented during the year and its status with respect to IDAM Plan developed
- Conduct Internal Audit at planned intervals to identify and address potential gaps in system and identify opportunities for performance improvement
- Review the entity's asset management policies, procedures and systems, at planned intervals, to ensure its continuous improvement, adequacy, suitability and effectiveness
- Provide recommendation and guidelines to IDAMP Team

The concerned MC shall retain appropriate documented information as evidence of the results of monitoring, measurement, analysis and evaluation.