



## **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)**

**D2 - Updated SOP - Integrated Development and Asset Management Plan (IDAMP)**



## Table of Contents

<b>Chapter 1. Introduction of IDAMP Manual</b> .....	5
<b>1.1. Introduction</b> .....	5
<b>1.2. Contextualizing the IDAMP</b> .....	5
<b>1.3. Purpose of the IDAMP Manual</b> .....	6
<b>1.4. Scope of Manual</b> .....	6
<b>1.5. Authority of the Manual</b> .....	6
<b>1.6. Controller of the IDAMP Manual</b> .....	8
<b>Chapter 2. Overview of MCs</b> .....	11
<b>2.1. Introduction</b> .....	11
<b>2.2. Functions of MCs</b> .....	11
<b>2.3. Composition and Organizational structure of MCs</b> .....	12
<b>Chapter 3. Preparation of IDAMP</b> .....	14
<b>3.1. Annual Planning for IDAMP</b> .....	15
<b>3.2. Development of Project Proposals</b> .....	22
<b>3.3. Operation &amp; Maintenance (O&amp;M) Costs Planning</b> .....	25
<b>3.4. Financial Capacity Analysis</b> .....	26
<b>3.5. Project Screening &amp; Phasing</b> .....	26
<b>3.6. Finalization of Integrated Development and Asset Management Plan</b> .....	29
<b>Chapter 4. Implementation of IDAMP</b> .....	31
<b>4.1. Introduction</b> .....	31
<b>4.2. Integration of IDAMP with ADP</b> .....	31
<b>4.3. Integration of IDAMP with Funding Agencies</b> .....	31
<b>Chapter 5. Asset Management Planning</b> .....	34
<b>5.1. Introduction</b> .....	34
<b>5.2. Preparation of Asset Management Plan</b> .....	34
<b>5.2.1 Water Services</b> .....	34
<b>5.2.2. Sewerage System</b> .....	39
<b>5.2.3. Vehicle</b> .....	41
<b>5.2.4. Parks</b> .....	42
<b>5.2.5 Streetlights</b> .....	46
<b>5.2.6 Roads</b> .....	48
<b>5.2.7 Buildings</b> .....	51
<b>Chapter 06: Monitoring and Evaluation of IDAMP</b> .....	53
<b>6.1. Establishment of Planning and Coordination (P&amp;C) Unit</b> .....	53
<b>6.2. Term of References for P&amp;C Unit</b> .....	53
<b>Annexure</b> .....	55

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## List of Tables

Table 1: Scope of Manual .....	6
Table 2: Planning Horizon.....	7
Table 3: LOS Indicators .....	16
Table 4: Project Scoring.....	27
Table 5: Maintenance Procedure for Tube wells .....	35
Table 6: Generator Maintenance.....	38
Table 7: Routine Inspection & Maintenance of Sewer System.....	39
Table 8: Maintenance of Disposal Station .....	40
Table 9: Quality Standards for Turf .....	43
Table 10: Quality Standards for Park Structures and Fixtures.....	44
Table 11: Quality Standards for Recreational Courts and Facilities .....	45
Table 12: Replacement Cycle for Light Sources in Roadway Lighting Systems .....	47

# 01 Overview of IDAMP

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## Chapter 1. Introduction of IDAMP Manual

### 1.1. Introduction

This document may be called as 'IDAMP Manual - Standard Operating Procedures for IDAMP' (hereinafter referred as "IDAMP Manual"). This IDAMP Manual is derived from the principles/ guidelines and policies prescribed in the 'Integrated Development and Asset Management Framework' "IDAMP Framework".

This IDAMP Manual sets out the detailed procedures for planning and investment of resources through 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. These procedures are based on tested methodology for the development of IDAMPs for Municipal Committees (MCs).

IDAMP Framework and IDAMP Manual has been based on local as well as global asset planning and management practices and procedures. Following resources were referred for development of IDAMP Framework and IDAMP Manual:

- ISO 55000 Asset Management -Overview, principles and terminology' - International Standard
- ISO 55001 Asset Management -Management systems-Requirements' - International Standard
- ISO 55002 Asset Management - Management systems-Guidelines for the application of ISO 55001' - International Standard

### 1.2. Contextualizing the IDAMP

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.

The MCs currently manage public capital assets worth billions of rupees. MCs provides various services and requires 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 system. 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.

### 1.3. Purpose of the IDAMP Manual

The primary purpose of IDAMP Manual is to prescribe the Standard Operating Procedures (SOPs) for evidence based planning, budgeting and management of assets on a medium term horizon of three years.

IDAMP Manual includes procedures for the following asset management activities:

- **Asset planning**
  - Annual preparation of Integrated Development and Asset Management Plan (IDAMP)
  - Implementation of IDAMP
- **Asset Management**
  - Development of Asset Inventory in GIS based AMIS
  - Management of assets through Asset Management Plans (AMP)
- **Monitoring and Evaluation**

### 1.4. Scope of Manual

IDAMP Manual is, in initial phase, applicable to the 16 Municipal Committees (MCs) of Punjab to strengthen the performance of MCs in urban management and municipal service delivery. These MCs are listed below:

Table 1: Scope of Manual

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		

### 1.5. Authority of the Manual

#### 1.5.1. Legal Status of Manual

- IDAMP Manual has been prepared under the guidelines of notified IDAMP Framework. IDAMP Framework and IDAMP Manual shall serve as instruments for medium term planning and management of the infrastructure of MCs of Punjab.

- The premise of the IDAMP in planning horizon of MCs shall be as follow:

Table 2: Planning Horizon

Planning Horizon	MCs
	Planning Instrument
Long Term	<b>Master/Sectoral Plans</b> (10-20 years)
Medium Term	<b>Integrated Development And Asset Management Plan (IDAMP)</b> (Three Years)
Short Term	<b>Annual Development Plan (ADP)</b> (One Year)

**1.5.2. Approval Authorities**

- IDAMP Manual shall be endorsed by the Punjab Municipal Development Fund Company (PMDFC), furthermore, IDAMP Manual shall be approved by the Secretary Local Government & Community Development Department for implementation in the MCs.
- After respective approval and endorsement, MCs shall adopt and implement the IDAMP Manual.

## 1.6. Controller of the IDAMP Manual

### 1.6.1. Homes of IDAMP Manual

The IDAMP Manual is housed at three levels as below.

- The Secretary of LG & CD, as the controller, will be the Policy Home for the Manual to ensure safe custody, and management of legal requirements for notification, maintenance, distribution, implementation and revision.
- The PMDFC, shall be the Implementation Home of the Manual providing the resource support to individual MCs for all aspects of IDAMP activities in accordance with the IDAMP Framework and Manual requirements.
- Individual MCs will be the Operational Home of the Manual and responsible for actually preparing, implementing and managing the process.

### 1.6.2. Distribution of IDAMP Manual

- Secretary LG & CD shall also ensure that the IDAMP Manual is not distributed without business intent. Further, Secretary LG & CD shall be responsible for ensuring that any person, party or group who receives IDAMP Manual is informed of the confidentiality requirement.
- All copies of the IDAMP Manual, revisions and changes shall be controlled by Secretary LG & CD and a due record of such revisions and changes shall be maintained in the Document Control Page. (Refer to sub section 1.6.4 for Document Control Page)
- PMDFC shall distribute the IDAMP Manual to the MCs.

### 1.6.3. Amendments to the Manual

- Amendment to the Manual may be proposed by a competent official in any of the MCs or LG & CD or PMDFC.
- Procedure For Amendment to the Manual
  - A competent official of MC may propose an amendment in these procedures to Chief Officer (CO) along with the business case for the proposed revision.
  - CO shall raise a 'Request for IDAMP Manual Amendment Form' as per format prescribed in 'Annexure, Form-IDAMP-1' and submit the same to Chairman / Administrator for review, after reviewing the appropriateness of proposed change and making further recommendations, Chairman / Administrator shall endorse the form.
  - After endorsement by the Chairman / Administrator, CO shall forward the Form to Secretary LG & CD for consideration and recommendation on the requested amendment.
  - Secretary LG & CD shall forward the Form to PMDFC for technical review and recommendation.
  - PMDFC shall technically review the proposed amendment. The PMDFC may consult with other MCs and seek their concurrence on the proposed amendment.
  - After technical review, The PMDFC shall submit the recommendation to the Secretary LG & CD for endorsement.



- Secretary LG & CD shall approve or reject amendment and record the same in the Document Control Page. Further, Secretary LG & CD shall circulate the approved amendment to all the MCs for implementation and compliance of revised procedures .
- COs of respective MCs shall circulate the change to all the relevant municipal offices and officials for compliance.
- The LG & CD shall annually issue a revised/ updated version of IDAMP Manual based on the changes approved during the year. While issuance of annual updated version, LG & CD shall update the 'Document Control Page' and archive all the versions of the IDAMP Manual.

**1.6.4. Document Control Page**

The Document Control Page is used to record the information about the revisions and/ or amendments (addition/ modification/ deletion) that have been made to the document:

Version	Date of Revision/ Amendment	Section	Page No.	Summary of change	Change Approved By
1		-	-	Initial Document	-

# 02 Overview of MCs

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## Chapter 2. Overview of MCs

### 2.1. Introduction

This section provides information about the MCs, its functions, composition and organizational structure.

### 2.2. Functions of MCs

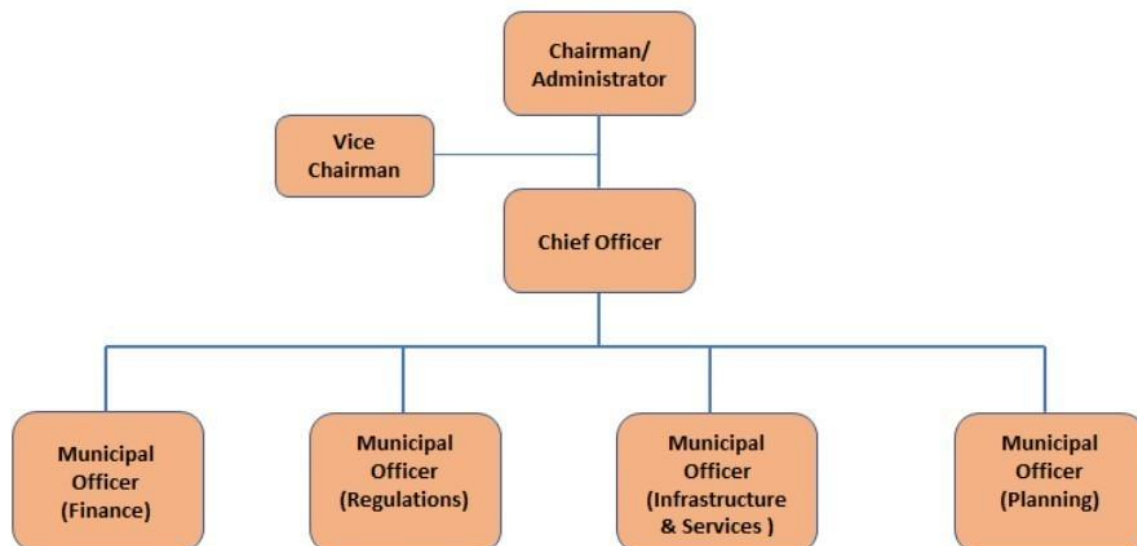
Section 31(p) of the Local Government Act, 2022, the Municipal Committees to provide, manage, operate, maintain and improve municipal infrastructure and services, including the following. The acronyms are assigned to each function, which is used for coding in Asset Management Information System (AMIS):

- water supply and control and development of water sources (WSS)
- sewage and sewage treatment and disposal (SEW)
- storm water drainage (SWD)
- sanitation and solid waste collection and disposal of solid wastes, treatment and disposal including landfill site and recycling plants (SWM)
- roads and streets (RDS)
- public transport and mass transit systems, construction of express ways, flyovers, bridges, roads, under passes, traffic planning, engineering and management including traffic signaling systems, signs on roads, street markings (TRP)
- firefighting (FIF)
- street lighting (SLT)
- parks, playgrounds, open spaces (PRK)
- parking stands (PST)
- graveyards (GYD)
- arboriculture/ tree afforestation (ARC)
- parking places (PST)
- transport stations, stops, stands and terminals (TRP)
- slaughterhouses (SLH)
- municipal libraries (LIB)
- community and cultural centers (CCC)
- land use planning (LUP)
- building control (BDC) and
- environmental protection (ENP).

### 2.3. Composition and Organizational structure of MCs

As per Rule 5 of the Local Government Conduct of Business Rules, 2007, MCs shall execute its business through following municipal offices:

- Chief Officer
- Municipal Office Planning
- Municipal Office Finance
- Municipal Office Infrastructure & Services
- Municipal Office Regulation



# 03 Preparation of IDAMP

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## Chapter 3. Preparation of IDAMP

This section contains procedures for evidence based planning of assets. For this purpose, an Integrated Development & Asset Management Plan (IDAMP) shall be prepared for upcoming three years on a rolling basis approach. IDAMP shall include identification of projects for replacements/rehabilitation of existing assets and creation/purchase of new assets for upcoming three years. Rolling basis means that for the initial three years, a roll-on plan is prepared for 'a', 'b', 'c' years. Next year, the 'a' year is excluded and 'd' year included, so that the plan still remains for the three years. For the 'b' and 'c' years, adjustments are made according to the implementation of 'a' year.

Preparation of IDAMP involves following activities:

- Annual IDAMP Planning
- Development of Project Proposals
- Operations and Maintenance (O&M) Costs Planning
- Financial Capacity Analysis
- Projects Screening and Phasing
- Finalization of IDAMP

### 3.1. Annual Planning for IDAMP

This section contains procedures to initiate the process for preparation of IDAMP. On annual basis, an IDAMP planning & review meeting shall be convened to review the progress of preceding year and plan for the upcoming three years. Following the meeting, process for the preparation of IDAMP shall be initiated by the office of Municipal Officer Infrastructure and Services.

#### 3.1.1. Annual Planning & Review Meeting for IDAMP

- In the first week of April, Municipal Officer (Infrastructure and Services) of MCs shall circulate an official letter to convene the Annual Planning & Review Meeting on IDAMP. Municipal Officer Infrastructure and Services shall attach the following documents with the letter:
  - Annual IDAMP Progress Report
  - LOS Report
- Annual Planning & Review Meeting of IDAMP shall be attended by the following personnel:
  - Chairman/ Administrator (Chair)
  - Chief Officer
  - Municipal Officer Finance
  - Municipal Officer Infrastructure and Services (Secretary)
  - Representatives of Punjab Municipal Development Fund Company
- Agenda of the Annual Planning & Review Meeting shall include the following activities and decisions:
  - Municipal Officer Infrastructure and Services (MO(I&S)) shall present the Annual IDAMP Progress Report and Annual LOS Report to the participants. Annual IDAMP Progress Report shall contain the information about status of procurement/ construction and operational ization of projects approved for the preceding year. Whereas, Annual LOS Report shall contain the information about LOS achieved during the preceding year.
  - Participants of meeting shall discuss and give their recommendation for setting the Target LOS for the upcoming three years.
  - Chairperson of the meeting shall approve the Reports. Further, Chairperson shall authorize Municipal Officer Infrastructure and Services to finalize the Target LOS and initiate the process for preparation of IDAMP.

### 3.1.2. Preparation and Notification of target Level of Service (LOS)

Municipal Officer Infrastructure and Services shall, on the recommendations of Annual IDAMP Progress Meeting, prepare LOS Statement for the upcoming three years and shall coordinate with the Chief Officer and Municipal Officers as well as the his/her subordinate staff for establishment of the following LOS indicators, duly taking into consideration the need to phase out the LOS indicators and KPIs in alignment with the current state of the MC and keeping in view the existence of requisite enablers / pre-requisites:

Table 3: LOS Indicators

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 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 or Breaks /Km)	Total number of pipe leakages/breaks per year expressed per km of the water distribution network.
	Unit operational cost - water sold (PKR)	Total annual operating expenses divided by the total annual volume of water sold. This represents production cost at consumer end.
	Unit operational cost - water produced (PKR)	Total annual operating expenses divided by the total annual water produced. This represents gross production cost.
	Water supply staff per 1000 water connections (No.)	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.	



Functions of MCs	Level of Service Indicators	Description
	Unfit water samples %	Total number of unfit water samples (not conforming with the requirements of NEQ) expressed as a percentage of total samples taken.
	Continuity of Service (Hrs. / Day).	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.
Sewerage and sewage treatment and disposal;	Sewerage Coverage %	Population with sewerage services (direct service connection/ through surface drains) 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 (No.)	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. reducing Chemical oxygen demand (COD) 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	Collection efficiency (%)	Total amount of solid waste collected expressed as a percentage of total solid waste produced.

Functions of MCs	Level of Service Indicators	Description
disposal of solid wastes, treatment and disposal including landfill site and recycling plants;	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 (%)	Percentage of Primary SWM Coverage each day in Roads
	Private Sector Primary Collection (%)	Percentage of Private Sector Primary Collection
	Open Collection Points (No.)	Number of Open Collection Points
	Secondary collection machinery (No.)	Number of Secondary collection machinery
	Adequacy of parking facilities for SWM vehicles	Whether there are adequate parking facilities available for SWM vehicles?
	Waste transported in covered vehicles (No.)	Number of covered vehicles for transporting the waste
	Private Sector involved in Secondary Collection	Whether Private Sector is involved in Secondary Collection or not?
	Sufficiency of existing dumping area	Whether sufficient dumping area (Landfill site) exist at MC or not?
	Mechanism for Final Disposal	Is there any 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 "E" expressed as a percentage of total roads.
	Beautification of chowks %	Number of chowks having monuments expressed as a percentage of total chowks
Public transport and construction of express ways, fly-overs, bridges,	Traffic signals coverage.	Traffic signals expressed as number of congestion points in the MC.

Functions of MCs	Level of Service Indicators	Description
roads, under passes, traffic planning, engineering and management including traffic signaling systems, signs on roads, street markings.	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 %	Percentage of MC area with Firefighting Coverage
	Available water storage capacity	Available water storage capacity
Streetlighting;	Streetlight coverage. (%)	Length of roads covered with street lights expressed in percentage of total length of main roads.
	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 as percentage of total MC area. %	Parks 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.
	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.
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.

Functions of MCs	Level of Service Indicators	Description
	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	Whether there are adequate facilities available at bus stands or not?
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.
	Daily Slaughter of small animals (%)	No of small animals slaughtered in the slaughter houses daily expressed in percentage of total small animals slaughtered in the MC area.
	Daily Slaughter of big animals (%)	No of big animals slaughtered in the slaughter houses daily expressed in percentage of total big animals slaughtered in the MC area.
	Revenue of Slaughter house (%)	Annual Revenue earned from slaughter houses expressed in percentage of their annual operational cost.
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.
Buildings;	Buildings with condition "A" (Excellent) %	Total number of buildings with condition "A" expressed as a percentage of total number of buildings.
	Buildings with condition "B" (Good) %	Total number of buildings with condition "B" expressed as a percentage of total number of buildings.
	Buildings with condition "C" (Fair) %	Total number of buildings with condition "C" expressed as a percentage of total number of buildings.
	Buildings with condition "D" (Poor) %	Total number of buildings with condition "D" expressed as a percentage of total number of buildings.
	Buildings with condition "E" (Failing) %	Total number of buildings with condition "E" expressed as a percentage of total number of buildings.

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Functions of MCs	Level of Service Indicators	Description
	Solar Penetration Index (SPI) %	The Solar Penetration Index (SPI) measures the percentage of buildings that have successfully undergone solarization.

- After compilation of LOS Statement, MO (I&S) shall forward the same to Chief Officer for his review and onward submission to the Chairman / Administrator for approval.
- After approval by the Chairman / Administrator, MO (I&S) shall notify the LOS Statement and shall also publish the same on the official website of the MC.

### 3.1.3. Circulation of letter for preparation of IDAMP

After notification of LOS Statement, MO (I&S) shall circulate an official letter to the respective municipal offices of the MC with the intimation to prepare project proposals for IDAMP. MO (I&S) shall also annex the Project Proposal Form (refer to Annexures for specimen of Project Proposal Form (Form 2.1 and 2.2)) and LOS statement with the letter.

### 3.2. Development of Project Proposals

This section contains procedures for initial planning of assets for incorporation in IDAMP. Initial planning involves identification of assets for replacement, rehabilitation or new creation of assets over three years in order to meet the target service delivery program. For this purpose, respective Asset Managers shall develop the detailed proposals for replacement/rehabilitation or new acquisition of assets. Asset Manager includes MC Officials who are controlling or using the asset for service delivery to the public. In the context of IDAMP Manual, Asset Managers include Municipal Officers for the respective municipal offices of the MC.

Development of project proposals involve the following activities:

- Project Identification
- Project preparation
- Projects Appraisal

#### 3.2.1. Project Identification

- AM shall, in consultation with the supporting staff, identify the infrastructure required to meet the service delivery program/ target LOS in designated service area/ boundaries. For this purpose, AM shall use the following tools/ techniques:

##### Asset Management Information System (AMIS)

AMIS, the software used for the recording and maintenance of assets inventory along with the attributes such as condition, failure risk and replacement year shall be used for analysis of existing assets.

##### Punjab Government Goals and Growth Strategies

Any compulsory recommendations/ requirements of Punjab Government shall be considered and used for projects identification.

##### Community Consultation

Asset Manager shall conduct the surveys on sample basis for obtaining the feedback of public regarding the quality of MC's services and the deficiencies in services in area.

##### Complaint Data

Asset Manager shall analyze the complaints data for identification of the areas and assets that need immediate attention.

- Depending on the infrastructure requirements identified through aforementioned tools/ techniques, AM shall identify the assets/work required over three years. Asset/work requirement include the following categories:
  - Rehabilitation/ replacement of existing assets

- Creation of new assets
  - AM shall consider the following factors while identification of assets/ work:
- **Rehabilitation/ replacement of existing assets:**

Rehabilitation/ replacement of existing assets means that assets are already been in operation but some of the components (civil works, or any machinery) needs to be replaced due to any of the following factors:

  - Assets have reached the end of useful life
  - Assets have condition rating D (poor) & E (failing)
  - Assets have High risk of failure
  - Recommendations of Government Startegies
  - There are regulatory/ statutory directions to replace the asset
- **Creation of new assets**

Creation of new assets means the construction of buildings and roads or any other machinery for reaching to un-served serviceable area by increasing the service delivery coverage. The need for enhancement in service delivery will be based on the growing needs of population, development intervention and extension of services in extended boundary of city that requires planning of new assets to be integrated with the existing network of assets.

After due consideration to above factors, AM shall identify the list of assets/ projects for replacement/ rehabilitation of existing assets and acquisition of new assets.

### 3.2.2. Preparation of Projects

- After identification of the assets, AM shall prepare the detailed projects on the Project Proposal Form (refer to Annexures for speciman of Project Proposal Form - Form 2.1 and 2.2). AM may group different assets under a single project if the improvement in the service delivery is based on the integtaed operation of different assets.
- AM shall perform the following activities in respect of identified project:
- **Preparation of technical design and technical specifications**
  - AM shall prepare the technical design/ specification of the projects. Technical design/ specification shall be based on the category of respective asset. Following indicative list is to be considered for preparation of technical design/ specification for rehabilitation / replacement of assets or creation of new assets. AM shall gather all the relevant information and perform necessary analysis to prepare project proposal encompassing following areas:
    - Identification of project area
    - Physical sustainability of the project
    - Legal consideration including ownership and possession of project site/ land
    - Capacity and specific manufacturer of machinery and equipment
    - Major activities to be undertaken for the project.
    - Relocation of facilities, if any in the project area.

- Financial viability of the project (please refer section 3.4)
- Environmental sustainability of the projects (please refer section 3.5)
- Having identified the technical specification/ design, AM shall develop GIS maps for the projects highlighting the area and identified projects on maps where service needs to be improved. Moreover existing and proposed projects should also be identified on respective maps.
- **Rough cost estimation of the projects**
  - AM shall estimate the rough cost of the project in the light of technical design/ specifications. In case the project comprises of rehabilitation / replacements as well as the extension of the facilities to unserved areas, both parts should be separately computed/prepared and combined at the level of summary of cost.
  - Rough cost shall be based on the following rates:
    - Bill of quantities / Back-up quantities
    - Latest Market Rate System (MRS) rates
    - The cost of non-MRS items shall be based on latest procurement cost with annual increase for inflationary adjustment or an open market quotation, or based on the rates given in the MRS System.
- **Operation and maintenance (O&M) costing of proposed projects**
  - In addition to the estimated rough cost, AM shall identify the Annual Operational and Maintenance (O&M) cost for the proposed project.
  - O&M Cost includes the operational cost for the operation of the asset and maintenance cost required to keep the asset in operational form.
  - For computation of Operational Cost, AM shall consider the following components:
    - Manpower cost
    - Energy cost (Electricity or POL)
    - Repair and maintenance cost
    - Supplies
  - For computation of Maintenance Cost, AM shall consult the asset management plan

### 3.2.3. Projects Appraisal

- After preparation of project, AM shall perform the project appraisal for the new assets/ projects. The results of appraisal shall play an important role in screening and phasing of identified projects.
- AM shall use the following appraisal techniques for the appraisal of the identified projects:
  - **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.



- For the appraisal of any identified project, Asset manager shall use the following assumptions:
  - **Costs:**
    - Costs should be taken at constant prices (without inflation)
    - Costs should include the capital costs, O&M costs, and Mitigation cost.
  - **Benefits**
    - Benefits should be taken at Constant prices (without inflation)
    - Benefits shall include the following:
      - Enhancement of revenue streams
      - Enhanced recovery management
      - Economic and Social benefits of projects
    - Residual value shall be taken as nil.
- After project appraisal, AM shall finalize the Project Proposal Form in respect of each project and submit the same to the MO (I&S).

### 3.3. Operation & Maintenance (O&M) Costs Planning

This section contains procedures for computation of Operational & Maintenance costs. O&M costs shall be incorporated in the IDAMP for allocation of funds to keep the assets in intended operational form.

AM shall compute asset wise annual operational and maintenance cost in respect for all the assets managed by the AM. For this purpose Asset Manager shall use the O&M Cost Forms for asset category wise calculation of O&M Costs. (Refer to Annexure- 3 for the specimen of O&M Costs Form)

Annual Operational cost/ unit (for each asset) shall be calculated, which include the following, among other specific cost elements:

- **Staff Cost** - this entails total annual salaries of staff responsible for operation and maintenance of the respective asset. For instance, staff includes 'DS operators' and 'electrician' for disposal station.
- **Electricity cost** - total electricity cost for the preceding year may be used as a reference, however, due adjustments should be made after considering the inflationary factors and impact of project interventions on electricity consumption.
- **Generator cost** - total fuel cost and repair & maintenance cost of generators for the preceding year may be used as a reference, however, due adjustments should be made after considering the inflationary factors and impact of project interventions on electricity consumption.
- **Operational cost of vehicles** - total fuel cost and repair & maintenance cost of vehicles for the preceding year may be used as a reference with due adjustments for the projected period.
- **Repair & maintenance Cost** - as per Asset Management Plan of respective asset. For instance, maintenance components of roads include patch work, sub base course,

base course, paint for traffic lane, kerb stone, paint for kerb stone, reflectorized pavement studs etc.

- **Any other cost** - which is relevant to the operation and maintenance of the asset like cost of supplies.

### 3.4. Financial Capacity Analysis

This section contains procedures for assessment of potential financial resources over the three years. Availability of financial resources determines the prioritization for investment in the most eligible projects. Results of financial capacity analysis assist the planning authorities in prioritization of projects or to arrange additional resources from external sources.

1. After receipt of project proposals from the Municipal Officers, MO (I&S) shall coordinate with MO Finance for assessment of the estimated figures of the own source revenue, government grants and loans/donations for the next three years.
2. MO Finance shall analyze the following potential financial sources that would be available for financing the projects:
  - **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 MC's 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 MC is assured and will be raised from donors, by clearly identifying the donor, fund, their requests and the year.
  - **Any other revenue source**
3. After receiving the financial estimations, MO I&S shall finalize the figures that would guide the Technical Team for final decision regarding selection and phasing of projects.

### 3.5. Project Screening & Phasing

Once the potential financial sources have been analyzed, the proposed projects 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, persons displaced (if any) due to execution of the project, effect on the livelihood of some or any person 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:

Table 4: Project Scoring

Index	Question	Index Weight	Question Weight	Sub Weight	Possible Responses	
<b>1. Project Purpose &amp; Service Delivery Improvement</b>						
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	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	10	Major contribution to key development goal.
					0	No consequences
					2.5	Minor consequences
		7.5			Major future consequences	
				10	Major immediate consequences	
<b>2. Public Response</b>						
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	5	0	Majority opposition
					1	Minority opposition
					5	Majority support
2.3	Is there support or opposition from		2.5	2.5	2.5	Minority support
					0	Majority opposition
					0.5	Minority opposition

Index	Question	Index Weight	Question Weight	Sub Weight	Possible Responses
	residents in the immediate vicinity of the new facility?			2.5	Majority support
				1.5	Minority support
<b>3. Environmental Impact</b>					
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
<b>4. Socio-Economic Impact</b>					
4.1	Will the project bring in direct revenue?		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. impact on employment, investment generation, change in land/property prices, change in citizens' expenditures, etc.?	15	7.5	0	Negative socio economic impact (e.g. displacement of local community, adverse impact on livelihood)
				2.5	Little or no long term economic development benefits
				5	Additional investment in the area and increased wealth for citizens
				7.5	Significant competitive advantage to industry and boost to the local economy
<b>5. Ease of Implementation</b>					
5.1	Has land been acquired for the project (If required)?		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
				2.5	Standard
				5	Easy
5.4	Ease of implementation of project in respect of technical design?		5	1	Difficult
				2.5	Standard
				5	Easy
5.5	Is there a capable system in place to implement and operate this project or is external support needed?		5	0	Outside expertise needed for construction, O&M
				1	Outside expertise needed for construction phase only
				2.5	Outside expertise needed for preparation phase i.e. feasibility studies
				5	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.

### **3.6. 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.

# 04 Implementation of IDAMP

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## Chapter 4. Implementation of IDAMP

### 4.1. Introduction

This section contains procedures for implementation of notified IDAMP. IDAMP is a medium term plan and it contains potential projects for upcoming three years. Thus these potential projects may be implemented through MC's own funding, local government regulated Annual Development Program (ADP) and/or nongovernment programs with the aid of Funding Agencies.

MCs are currently under statutory obligation to comply with the requirements of Annual Development Planning process. Annual Development Program represents a key policy instrument for implementing development vision of the government through strategic resource allocation with a medium term perspective.

In addition to ADP, MCs also execute development works with the aid of certain funding agencies. For this purpose, funding agencies support MCs through funds transfer or aid in kind for potential development projects.

As IDAMP is a medium term planning instrument, It includes the maximum projects that are objectively beneficial, technically sound and practically feasible for implementation in the next three years. Thus, IDAMP shall provide potential investment projects that could be adopted through ADP or funding agencies.

### 4.2. Integration of IDAMP with ADP

- MO (Finance), with the approval of the Chairman/Administrator, shall issue a budget call letter which outlines the budget calendar and provides instructions and forms for the preparation of the budget, as well as the figures of available resources for use in formulating budget estimates by individual offices. The budget call letter is finalized after careful consideration of priorities and consultation with relevant stakeholders and under the guidance of the Mayor or Chairman.
- MO (Finance) then consolidates the budget estimates received from all Municipal Officers and forwards the consolidated estimates to the Mayor or Chairman, through the Chief Officer, for finalization prior to submission to the House.
- Therefore, once IDAMP process has been operationalized, MO (Finance) shall prepare the ADP in line with the notified IDAMP.
- While preparation and consolidation of Annual ADP, MO (Finance) shall incorporate the pre-notified projects from IDAMP in the ADP. MO (Finance) shall annex the Project Proposal of approved projects in the IDAMP to the PC-I and incorporate the project in ADP.
- In case of change in circumstances or MCs requirements, Non IDAMP projects could also be incorporated in the ADP of upcoming year. However, Non IDAMP projects must be routed through the process of IDAMP.

### 4.3. Integration of IDAMP with Funding Agencies

- Certain IDAMP projects which could not be adopted in ADP shall be implemented through funding agencies or through other source.
- Whenever, a funding agency wants to plan and invest for the up gradation and rehabilitation of MC, Chief Officer shall present the projects of IDAMP to the interested agency.



# 05 **Asset Management Planning**

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## Chapter 5. Asset Management Planning

### 5.1. Introduction

This section contains information about operational and maintenance activities to keep the assets operational and for the intended use. The assets are subjected to wear, tear, erosion and corrosion due to their nature of functioning and use and therefore these are vulnerable for failures. In order to keep the assets up and available for use, assets should be properly operated and maintained. In the following sub sections, various activities/schedules are detailed in respect of all the assets for effective operation and timely maintenance.

### 5.2. Preparation of Asset Management Plan

Asset Manager shall, in consultation with the Technical Team, prepare Asset Management Plan in respect of following all categories of assets. Following are provided the guidelines that should be considered in line with OEM requirements:

#### 5.2.1 Water Services

For all the components of water supply system including water supply pipelines, tube wells, generators, water treatment plants, and disinfection systems etc., the asset management activities (operation and maintenance) shall be developed.

Water supply pipe lines are used to deliver the water throughout the community. Asset managers should:

- Conduct a surveillance programme for leaks in pipelines, pipe joints and valves.
- Conduct a water quality surveillance programme to avoid any sort of water contamination.
- Conduct a programme for locating and repairing leaks including rectifying cross connections if any, arrange for flushing, cleaning and disinfecting the mains.
- Establish procedures for setting up maintenance schedules and obtain and process the information provided by the public and the maintenance teams about the pipeline leaks
- Establish repair procedures for standard services and with provision for continuous training of the team members
- For equal distribution of water, online booster pumps are recommended to have adequate terminal pressure.

It is recommended that the house connections have metering systems so that consumers can manage their own water wastage in order to avoid receiving additional bills and to lessen the burden on MCs to generate more water, and for the reduction in the energy expenditures of MCs the Power Factor Improvement equipments (PFI) shall be installed.

In addition to above, pipeline bursts/ main breaks can occur and respective asset managers shall have a plan for attending to such events, including but not limited to the following:

- Preventive or routine maintenance should be carried out to prevent any breakdown of the system and to avoid emergency operations to deal with leakage and under

pressure lines. Preventive maintenance is more economical and provides for reliability in operations of the sewer facilities.

- Emergency repairs, which would be very rare if proper maintenance is carried out well also, have to be provided for. Proper inspection and preventive maintenance are necessary.
- Scouring of pipeline Scouring is done to clean the transmission lines by removing the impurities or sediment that may be present in the pipe.
- Leakage control The maintenance staff during surveillance operation can report visible leaks found by him to his superiors. Critical areas where leaks often occur have to be identified and appropriate correct measures have to be implemented.
- Chlorine Residual Testing A minimum free chlorine residual of 0.2 mg/ liter at the receiving reservoir of a transmission system is needed to be maintained. Absence of residual chlorine, old, rusted, perforated, and substandard consumer connections could indicate potential presence of contamination in transmission system. Following steps which are required to be taken are:
  - Testing of residual chlorine
  - Checking the chlorination equipment at the start of the transmission system.
  - Searching for source of contamination along the transmission system which has caused the increase in chlorine demands.
  - Immediate rectification of the source of contamination

Similar to the above, there are certain activities which are specific to the operation and maintenance of tube wells and water treatment plants. There are various components of tube well, which needs to be considered for the development of effective asset management plan such as motor control unit, main circuit breaker, pressure gauge, motor, pump, valves, flow meter etc.

Table 5: Maintenance Procedure for Tube wells

Sr. No	Tube Well Parts	Maintenance Activities			
		Daily	Monthly	Quarterly	Annually
1.	Pump	a) Clean the pump, motor and other accessories b) Check coupling bushes/rubber spider. c) Check stuffing box, gland packing, vertical or horizontal adjustment of the pumps etc. Observation <ul style="list-style-type: none"> <li>▪ Abrupt changes in</li> </ul>	a) Check free movement of the gland of the stuffing box. Clean and apply oil to the gland bolts. b) Inspect the mechanical seal for wear and replacement if necessary. Check condition of bearing oil and replace if necessary.	a) Check alignment of the pumps whenever some vibration in the pumping unit is observed or there is a change in the noise of the operation of pumping unit. b) Clean oil lubricated bearings and replenish with fresh oil. If bearings are grease lubricated, the condition of the grease should be checked and replaced/replenished	a) Clean and flush bearings with kerosene and examine for flaws developed, if any. b) Clean bearing housing and examine for flaws, e.g., wear, grooving etc. Change oil or grease in bearing housing. c) Examine shaft sleeves for wear or scour and necessary rectification.

Sr. No	Tube Well Parts	Maintenance Activities			
		Daily	Monthly	Quarterly	Annually
		bearing temperature. ▪ Oil leakage from bearings ▪ Leakage from stuffing box or mechanical seal ▪ Changes in vacuum gauge and pressure gauge readings		to the correct quantity. c) Tighten the foundation bolts and holding down bolts of pump and motor mounting on base plate or frame. Check vibration level with instruments if available; otherwise by observation. d) Clean flow indicator, other instruments and appurtenances in the pump house	d) Check stuffing box, glands, lantern ring, and mechanical seal and rectify if necessary. e) Check clearances in wearing ring. f) Check impeller hubs and vane tips for any pitting or erosion. g) All vital instruments i.e., pressure gauge, vacuum gauge, ammeter, voltmeter, h) Check performance test of the pump for discharge, head efficiency.
		12,000 operational hours may be taken as broad guidelines for overhauling of tube wells (Vertical Turbine Pump).			
2.	Motor	a) Clean external surface of motor. b) Examine earth connections and motor leads c) Check for any abnormal Bearing noise. d) Changes in voltage. e) Changes in current. f) Sparks or leakage current in motor, starter, switchgears, cable etc.	a) Check belt tension. In case where this is excessive/loose it should immediately be maintained. b) Blow dust from the motor.	a) Check insulation resistance of the motor. b) Check tightness of cable gland, lug and connecting bolts. c) Check and tighten foundation bolts and holding down bolts between motor and frame. d) Check vibration level with instrument if available; otherwise by observation	a) Clean and flush bearings with kerosene and examine for flaws developed if any b) Clean bearing housing and examine for flaws, e.g., wear, grooving etc. c) Blow out dust from windings of motors thoroughly with clean dry air. d) Clean and varnish dirty and oily windings. e) Check condition of stator, insulation, terminal box, fan etc. f) Check insulation resistance to

Sr. No	Tube Well Parts	Maintenance Activities			
		Daily	Monthly	Quarterly	Annually
					earth and between phases of motors windings, control gear and wiring. g) Check air gaps. h) Check resistance of earth connections
3.	MCU	a) Check voltage and all three phases of electricity. b) Clean the external surface c) Check for any spark or leakage current d) Check for overheating e) All motor protection devices should be in place and working. f) Motor connection plate should be in place and all connecting wires should be tight on the connection plate terminals. g) Earthing of motor and MCU should be in place and working. h) All volt meters, ammeters and phase indication lights should	a) Blow the dust and clean internal components in the panel, breaker and starter b) Check and tighten all connections of cable, wires, jumpers and bus-bars. All carbon deposits shall be cleaned c) Check relay setting d) Check motor current it should take its rated current and not excessive current. e) Check all contactors' tips in the MCU.	-	-

Sr. No	Tube Well Parts	Maintenance Activities			
		Daily	Monthly	Quarterly	Annually
		always be working. i) Check power factor meter should be in place.			

Specifically where surface water source is used, the filter media is required to be replaced every 6 months.

For civil works, operation and maintenance activities are listed in section 5.2.7.

For metered consumer connections operation/maintenance/inspection shall be performed as per the manufactures' guidelines.

Lastly, there are certain considerations for the generator used by MC for municipal service delivery, in general and for water supply system, in particular. The maintenance activities involve for generator are described in below table;

Table 6: Generator Maintenance

Sr. No.	Maintenance Item	Method of checking					Frequency
		Visual	Record	Change	Drain	Test	
1.	Coolant heater and level	X	X				Daily
2.	Check and record oil and fuel level	X	X				Daily
3.	Examine charge-air piping	X					Daily
4.	Drain water from tank and filter		X		X		Weekly
5.	Check air cleaner	X					Weekly
6.	Check battery charges	X					Weekly
7.	Check coolant concentration		X		X		Monthly
8.	Exhaust water trap	X			X		Monthly
9.	Check drive belt tension	X					Monthly
10	Check starting battery	X	X			X	Monthly
11	Change fuel, oil and air filter		X	X			6 months
12	Examine radiator	X					6 months
13	Flush and clean cooling system				X		Annually

### 5.2.2. Sewerage System

Main components of an effective sewerage system are (a) Sewer Pipelines and (b) Disposal Pumps. Sewers are the most important part of a sewerage system - which are laid below the ground and are difficult to repair. Hence great care is needed in their O&M.

There are two types of maintenance of a sewerage system

- **Preventive or routine maintenance** should be carried out to prevent any breakdown of the system and to avoid emergency operations to deal with clogged sewer lines or over flowing manholes or backing up of sewage into a house or structural failure of the system. Preventive maintenance is more economical and provides for reliability in operations of the sewer facilities.

Table 7: Routine Inspection & Maintenance of Sewer System

Category	Manhole	Sewer
Trunk/Main Sewer	Once a year	Once on 2 year
Lateral Sewer	Once in 2 years	Once in 2 years
Connected Sewer	Once in 3 years	Once in 3 years

- **Emergency repairs**, which would be very rare if proper maintenance is carried out well also, have to be provided for. Proper inspection and preventive maintenance are necessary.
- **Regular Desilting and Cleaning:** Regular desilting and cleaning of gully grating chambers, sewer manholes, wet wells, and sewer barrels. sucker, jetting and winching machines are used by mcs for desilting, cleaning and removal of blockages. (desilting of sewer system is performed before the start of raining season, or when the complaints are received). O&M of machinery/equipment used in sewer cleaning, is covered under section 5.2.3.

In addition, disposal pumps also constitutes an important part of sewerage system. Asset managers shall follow the O&M requirements as are provided by Manufacturers in line with the specification of pumps. However, the following points shall be observed while operating the pumps;

- Dry running of the pumps should be avoided
- The delivery valve should be operated gradually to avoid sudden change in flow velocity which can cause water hammer pressures.
- The running of the duty pumps and the standby should be scheduled so that no pump remains idle for long period and all pumps are in ready-to run condition
- Frequent starting and stopping should be avoided as each start causes overloading of motor, starter, contactor and contacts. Though overloading lasts for a few seconds, it reduces life of the equipment.
- Pumps properly primed before starting
- Proper sewer safety equipment is required for cleaning of sewers.

A maintenance schedule for dispoal pumps shall include following types of inspections:

- Routine maintenance & inspections
- Quarterly inspections
- Annual inspections

Table 8: Maintenance of Disposal Station

Sr. No.	Routine Maintenance & Inspection	Quarterly inspections	Annual inspections
1.	<ul style="list-style-type: none"> <li>- Inspect the seal</li> <li>- Check the level and condition of the oil through the sight glass on the bearing frame.</li> <li>- Check for unusual noise, vibration, and bearing temperatures.</li> <li>- Check the pump and piping for leaks.</li> <li>- Analyze the vibration.</li> <li>- Inspect the discharge pressure.</li> <li>- Inspect the temperature.</li> <li>- Check the seal chamber and stuffing box for leaks.</li> <li>- Ensure that there are no leaks from the mechanical seal.</li> <li>- Adjust or replace the packing in the stuffing box if you notice excessive leaking</li> <li>- Check sluice, nonreturn, and penstock valves</li> <li>- Clean screens in the screening chambers</li> <li>- Clean volute chamber of pumps</li> <li>- Visual inspection of force main route to check for any damage sections.</li> </ul>	<ul style="list-style-type: none"> <li>- Check that the foundation and the hold-down bolts are tight.</li> <li>- Check the packing if the pump has been left idle and replace as required.</li> <li>- Change the oil every three months (2000 operating hours).</li> <li>- Change the oil more often if there are adverse atmospheric or other conditions that might contaminate or break down the oil.</li> <li>- Check the shaft alignment, and realign as required</li> <li>- Check drywell</li> </ul>	<ul style="list-style-type: none"> <li>- Check the pump capacity.</li> <li>- Check the pump pressure.</li> <li>- Check the pump power</li> <li>- Check civil structure</li> </ul>



### 5.2.3. Vehicle

Asset managers in MCs shall ensure the proper maintenance of vehicles, which includes compliance with the OEM requirements for vehicles. In addition, there are certain standard instructions that shall be considered for the development of asset management plan for vehicles:

1. Tire pressure should be visually inspected frequently. Tires that appear low will be checked with a tire pressure gauge to ensure that air pressure is maintained within the manufacturer's suggested range.
2. Ensure the optimum level of all fluid levels and if needed, fluids may be added according to the manufacturer's recommendations/specifications.
3. Windshield and windows are cleaned as needed.
4. Interior of vehicles shall be swept/vacuumed and cleaned as needed.
5. Cargo areas of the vehicles shall be maintained and cleaned so that the vehicle is suitable for the next transport.
6. Exterior surface is washed as needed.
7. Scheduled maintenance is to be conducted by an approved vendor(s) at the manufacturer's recommended intervals.
8. Records of vehicle maintenance should be entered in the vehicle log book located in the vehicles glove box and should include:
  - a. Date maintenance/service performed.
  - b. Mileage/hours of operation at time of service.
  - c. Type of maintenance performed.
  - d. Name of vendor or person(s) performing maintenance.
9. Any concerns of vehicle performance especially involving safety, signs of damage or abnormal wear of parts and accessories, fluids leaking, dents or scratches are to be reported to a supervisor immediately.
10. Record the monthly service performed on Log Book and initial next to the vehicle you serviced.
11. Visually inspect all belts and hoses for signs of wear while conducting maintenance.
12. Scheduled maintenance:
  - a. Motor oil and filter are changed as per manufacturer's recommendation.
  - b. Rotate tires at every oil change interval
  - c. Replace cabin air filter as per manufacturer's recommendation.
  - d. Replace engine air filter as per manufacturer's recommendation.
  - e. Vehicle and motor routine service conducted as suggested by the manufacturer as outlined in the owner's manual or on an as needed basis.
13. Check all fluid levels monthly and add fluids according to the manufacturer's recommendations/specifications. Fluids routinely checked include:

- a. Oil/Coolant/antifreeze
- b. Brake
  - i. Carts should have preventative maintenance performed semi-annually. Preventative maintenance includes:
  - ii. Grease and lubricate wheels and steering.
  - iii. Check/adjust brakes.
  - iv. Check batteries and charging system
  - v. Check tires and tire pressures (i.e., 18-22 PSI).
- c. Battery
  - i. Area around the batteries is clean and dry. Fluids around the battery may be an indication that fill caps are loose or the battery case is cracked and electrolyte is leaking. Leaking batteries must be replaced.
  - ii. Battery cables and terminals are intact, snugly connected, and not corroded. Loose connections or damaged parts should be promptly repaired.
  - iii. Electrolyte levels are appropriate and filled as needed. The correct level of electrolyte is ½" above the plates in each cell. Allowing plates to be exposed to air will damage the battery.  
  
Sequence for filling batteries:
    - iv. Open vent caps and visually inspect fill wells.
    - v. Check fluid level; minimum level is at the top of the plates.
    - vi. If necessary add enough distilled/deionized water to cover top of plates at this time.
    - vii. Replace caps.
    - viii. Batteries should be charged prior to adding any additional water.
- d. Power steering
- e. Windshield washer
- f. Transmission

14. Fuel tank should be maintained above the ½ full mark to reduce condensation accumulation in the fuel tank.

15. Visually inspect all belts and hoses for signs of wear while conducting maintenance.

#### 5.2.4. Parks

The following procedures provide guidelines for periodically inspecting the tangible features of each park site and evaluating their condition to ensure safe, enjoyable experiences for visitors. Depending on the area of responsibility, safety inspections shall be performed daily/weekly/monthly/quarterly/biannually or annually. The findings of these inspections can then be compared to planned levels of achievement.

MC shall ensure the mix of trees and shrubs with various colors, shapes and textures that shall add natural beauty. Additionally, this vegetation shall provide a great deal more by keeping air supply fresh, trapping and filtering dust and pollen, providing shade, acting as sound barriers, suppressing weeds, preventing soil erosion and camouflaging unsightly objects.

The performance goal is to maintain 90% of the turf and landscape areas in accordance with the below quality standards:

Table 9: Quality Standards for Turf

Sr. No.	Factors	Irrigated Turf Quality Standards	Non-irrigated Turf Quality Standards
1.	Color	Color is the most obvious and widely used indicator of turf quality. Overall turf color shall be medium to dark green with only a few variations of lighter green and brown.	Overall turf color shall be light to medium green. There will be some variance from time to time due to changes in environmental conditions such as drought, wind, soil pH, etc.
2.	Height	The importance of uniform height to turf is easily demonstrated by looking at newly mowed turf next to turf that has not been mowed for several days. Turf areas are to be kept at a uniform height between 3 ½ and 5 inches throughout the park system.	The importance of uniform height to turf is easily demonstrated by looking at newly mowed turf next to turf that has not been mowed for several days. Turf areas are to be kept at a uniform height between 3 ½ and 5 inches throughout the park system.
3.	Density	A thick stand of turf provides a more functional, safer surface for park users, a more pleasing appearance and protection against weed intrusion. In irrigated areas, turf shall be dense and soil not visible from the surface.	Although the turf will not be as dense without irrigation, a good ground cover shall be maintained in most common areas with very little soil visible from the surface. Efforts must be made to identify and correct all ruts and uneven surfaces that are considered hazardous.
4.	Edging	The aesthetic qualities of turf are generally enhanced by clearly defining the borders of designated areas. The more obvious the border, the sharper the contrast. Turf boundaries will be generally well defined with clean cut edges. Grass shall not stray from designated areas.	Turf boundaries are generally well defined, although edges may not be clean cut.

Irrigation systems shall be evaluated on the number of systems operating according to planned patterns and time schedules. An operational irrigation system must perform the following:

- Irrigate when activated
- Provide water to entire area it is intended to service

- Avoid watering unintended targets
- Shut down when deactivated
- Have at least 90% of individual sprinklers functional

The relevant MC staff will measure performance of irrigation systems by completing biannual inspections. The performance goal is to maintain at least 90% of the irrigation systems in operational condition.

In addition to above, the following services shall be ensured by the caretaker:

- Equipment is functional
- Supplies are restocked
- Surfaces are free of graffiti
- Facilities are ADA accessible
- Surfaces appear to be freshly painted
- Seating is smooth
- Trash cans are adequate
- Grills are clean (ashes kept at a minimum)
- Site has proper drainage
- Floors are clean
- Pleasant odor is present
- Cobwebs and insects are not present
- Area is free of standing water
- Drinking fountains are clean and functional
- Electrical outlets are functional and covered

Every refuse receptacle/waste container will be checked and emptied a minimum of three times per week with the exception of group picnic areas where receptacles/waste containers will be emptied a minimum of five times per week. The refuse receptacle/waste container:

- Shall be inspected each time they are serviced for cleanliness, functionality and safety
- Shall function as designed including lids and liners
- Shall have no protruding hardware
- Placement shall not impede traffic and/or present hazards
- Shall be cleaned, repaired and/or replaced as required
- Effort shall be made to ensure receptacles/waste containers are free of odors and insects are effectively controlled
- Shall be free of graffiti
- Exterior shall be free of animal waste
- Grounds surrounding receptacles/waste containers shall be clean

The performance goal of the Parks is to maintain at least 90% of parks refuse receptacles/waste containers in a clean, safe and functional condition. Moreover, the following structures and fixtures quality standards shall be complied:

**Table 10: Quality Standards for Park Structures and Fixtures**

Sr. No.	Area	Standards
1	Fencing and gates	<ul style="list-style-type: none"> <li>▪ Shall be securely anchored to the ground</li> <li>▪ Framing, fabric and hardware shall be in good repair</li> </ul>

Sr. No.	Area	Standards
		<ul style="list-style-type: none"> <li>▪ Shall be free of graffiti</li> <li>▪ Shall be free of sharp edges</li> <li>▪ Gates shall swing freely, with latches functional</li> </ul>
2	Benches and outdoor bleachers	<ul style="list-style-type: none"> <li>▪ Shall offer smooth seating surface</li> <li>▪ Shall be secure and sturdy (bleachers anchored to concrete slab)</li> <li>▪ Shall be free of unintended protrusions (nails, bolts, etc.)</li> <li>▪ Shall be free of graffiti</li> <li>▪ Shall have skid-resistant foot surfaces</li> </ul>
3	Plumbing fixtures	<ul style="list-style-type: none"> <li>▪ Shall be securely anchored</li> <li>▪ Shall provide a steady flow of water when used</li> <li>▪ Shall not leak or run when not in use</li> <li>▪ Shall drain freely and completely</li> <li>▪ Shall be free of graffiti</li> </ul>
4	Electrical fixtures and poles	<ul style="list-style-type: none"> <li>▪ Shall be properly anchored or secured</li> <li>▪ Shall be operational and meet each facility's light level standards</li> <li>▪ Shall have no exposed wires</li> </ul>
5	Signage	<ul style="list-style-type: none"> <li>▪ Shall be free of graffiti</li> <li>▪ Shall be visible and legible</li> <li>▪ Shall be properly secured</li> <li>▪ Shall be located so as not to present a hazard to park visitors</li> <li>▪ Shall meet all traffic and department standards where applicable</li> </ul>
6	Shade Structures and Sails	<ul style="list-style-type: none"> <li>▪ Fabric, framing, and hardware shall be in good repair</li> <li>▪ Cables shall have proper tension and be in good repair</li> </ul>

The performance goal of the parks operations division is to maintain 90% of buildings, structures and fixtures in a condition that meets all quality standards listed above.

The following quality standards indicate the condition of recreational courts and facilities (excluding play structures and fitness zones). The management reserves the right to close any of these facilities if an unsafe condition or hazard is present.

**Table 11: Quality Standards for Recreational Courts and Facilities**

Sr. No.	Area	Standards
1	Surface	<ul style="list-style-type: none"> <li>▪ All playgrounds will contain an approved surface material (sand, pour-in-place, artificial turf or engineered mulch) spread over the entire play area</li> <li>▪ Mulch fall zones shall be a minimum compressed cushion of 9 inches in depth</li> <li>▪ Surface shall be free of hazardous materials (broken glass, animal feces, etc.)</li> <li>▪ All playgrounds shall be free of tripping hazards</li> <li>▪ Concrete footings shall be covered by surface material</li> </ul>
2	Swings	<ul style="list-style-type: none"> <li>▪ Seats, straps and rivets shall be sturdy</li> </ul>

Sr. No	Area	Standards
		<ul style="list-style-type: none"> <li>▪ Chains, S-hooks, swings hangers and assemblies shall be in good working order and signs of wear shall be limited</li> </ul>
3	Slides	<ul style="list-style-type: none"> <li>▪ Shall be free of stress or damage</li> <li>▪ Ladders shall be sturdy and complete</li> <li>▪ Exits shall be parallel to the ground</li> <li>▪ Slide surface shall be free of holes, rough edges and foreign objects</li> </ul>
4	Climbers	<ul style="list-style-type: none"> <li>▪ Shall have tight fittings</li> <li>▪ All parts shall be present, intact and in working order</li> </ul>

Playground utility refers to the ability of the individual pieces of equipment to perform their intended function. Utility shall be evaluated by observing each activity area as a whole. Although a few pieces of play equipment may be non functional, the overall activity area may still function as intended. For instance, a five swing unit may have one swing missing, but the other four may adequately provide for the intended purpose. Any activity area judged to be unsafe cannot be evaluated as functional. If it cannot be repaired within 48 hours and is removed from service, it must be evaluated as nonfunctional.

This particular rating of playground equipment requires a certain degree of subjectivity. The intent is not to judge the design of a structure or the colors selected for a piece of equipment; rather, the intent is to judge the overall appearance of the equipment compared to its original appearance. Children prefer new things to old, shiny objects instead of dull and bright colors compared to faded. Playgrounds must be attractive to those that use them and shall be maintained with this in mind.

When the private vendors installs recreational facilities/games for the children in the parks, the MC representative shall ensure that all the required safety measures are complied, further the operations and maintenance of the facilities shall be as per the OEM guidelines.

The performance goal of the Parks Operations Division is to maintain 90% of playgrounds in accordance with the above quality standards.

Although quite often it goes unnoticed, an important task is to ensure that all park facilities are accessible. With many miles of trails, paths, boardwalks, crossovers and roadways within the park system supporting vehicular, pedestrian and wheelchair traffic, special attention must be given to the safety and aesthetics of each route. Routes shall be relatively smooth and free of any trip/slip hazards. Separated paths shall not have unintended differentials greater than 1/2 inch in height. Mulched or wood chip trails shall not contain any large pieces of vegetation exceeding 3 inches in length.

Washouts caused by erosion will be repaired within 48 hours of notification. Trees and shrubs will be properly pruned to avoid any route obstruction. The performance goal is to maintain 90% of trails, paths, boardwalks, crossovers and roadways in accordance with the above listed quality standards.

### 5.2.5 Streetlights

Routine Maintenance activities should be completed on all roadway lighting systems and should include:

- Inspecting, checking, elementary testing, cleaning, lubricating and performing minor repairs on all Roadway Lighting System Components including luminaires, lighting brackets, wiring, poles, frangible and safety bases, pads and footings, lowering and raising devices, sub-stations, distribution assemblies, cabinets and power supplies on a regular basis.
- Visual inspection and repair of all grounding and bonding connections and terminations once every 6 months as part of the relamping cycle. Check that all connections and terminations are tight; and that wires are not corroded, frayed, or broken.
- Testing, repair and replacement of faulty components on all Roadway Lighting System Components including luminaires, lighting brackets, wiring, grounding, poles, pole bases, frangible and safety bases, pads and footings, lowering and raising devices, sub-stations, distribution assemblies, cabinets and power supplies a minimum of once every 4 years. Luminaires that are replaced should be replaced with luminaires of similar photometric performance, or as directed by the asset owner.
- Perform ground resistance testing at each power supply ground electrode a minimum of once every 4 years.
- Perform ground resistance testing at each ground grid and ground electrode a minimum of once every 8 years.
- Group replacement of light sources (lamps) in Roadway Lighting Systems on a fixed cycle according to table shown below.
- Lights which are installed on the electric poles instead of street light poles, they require additional safety from voltage fluctuations. They should be additionally provided with the Surge Protections Devices (SPDs).

In addition to the aforementioned routine maintenance activities, the following activities should be completed for all high mast lighting systems:

- Top-latching raising and lowering systems should be inspected, operationally tested, and maintained at least once every 2 years.
- Non-latching raising and lowering systems should be inspected, operationally tested, and maintained at least once every 6 months.

**Table 12: Replacement Cycle for Light Sources in Roadway Lighting Systems**

Light Source	Group Replacement Cycle ( years )
High Pressure Sodium	4 - 5
Metal Halide	3 - 4
Low Pressure Sodium	3 - 4
Induction	Replacement according to the manufacturer’s recommendations and the owner’s experience
Light Emitting Diode	Replacement according to the manufacturer’s recommendations and the owner’s experience

Non-Routine Maintenance shall be required whenever there is a critical failure of any system component of the Roadway Lighting System or whenever vehicular accidents, weather or other factors have caused damage to System Components. Critical Failures of the Roadway Lighting System are identified as below. After detecting or being made

aware of the Critical Failure, Non-Routine Maintenance should be initiated in a timely manner.

- Aerial Span Wire Down
- Pole Knocked Down or Hit
- Power Supply Knocked Down
- Power Supply Failure
- Low Voltage
- Ground Fault
- Presence of Voltage on Non-Current Carrying System Components
- Energization of Surfaces Accessible by the Public
- Overhead equipment unfastened or hanging over roadway
- Damage that exposes the public to energized electrical equipment ( e.g. vandalism )
- Faulty Photo Control Circuits for Group Control of Lighting
- Unbalanced, unlatched or partially unlatched high mast lighting ring
- Failure of a Pole, Arm, or other Structural Element

### 5.2.6 Roads

With regard to roads, there are different consideration, as per provided in this section. For storm drain protection, asset manager shall:

- Locate and block storm drain inlets (within 25 feet and/or down gradient from) during maintenance work such as concrete curb and gutter work, resurfacing, paving, striping/marketing, or saw cutting.
- Place covers, rock wattles, sand bags, or filter fabric around inlets to protect them from entry of wastes, dusts, overspray or slurry.
- Inspect site at the beginning of the day and end to ensure operations are not contributing sediment or other pollutants to the flow line or storm drain.
- Clean right of ways (roadways) with brooms or street sweepers - as needed.
- De sludging of drains in dry weather before rainy seasons.

For concrete work, asset manager shall consider the following considerations:

- Use the minimum amount of water, when observe cutting concrete. Let the waste slurry dry and then sweep it up before leaving the location. A wet vacuum may also be used to pick up the waste slurry immediately after cutting is complete. Do not allow slurry to reach storm drains.
- Designate a "Concrete Wash out Area" that is as far as possible from any surface waters, storm drain inlets or drainage ditches and is located in a low area where wash water will pool and soak into the ground.
- Concrete trucks must washout in the wash out area or into a container such as a kiddie pool or wheelbarrow.



- Maintain the wash out area, inspect it for clean out needs, and check for run-on and run-off.
- The debris from the wash out area must be taken to a permanent disposal site when the washout is full and when the project is complete.

In order to control erosion and storage of materials, asset manager shall:

- Cover and contain all liquid and solid materials to prevent run off.
- Avoid storing piles of materials (soil, sand, gravel) in street, near storm drains or gutters. If dirt piles must be stored in the street, they must have berms or wattles surrounding them to prevent run-off. Rock wattles should be placed around all down gradient storm drains to prevent sediment from reaching the inlets
- Place excavated material on the uphill side of trenches to minimize sediment run-off.
- Control erosion to the maximum extent possible
- Inspect and maintain all erosion or sediment control devices or equipment installed in erosion-prone areas in road construction projects as per the Stormwater Management Plan (SWMP).
- Ensure that projects over 1 acre have the proper Stormwater Discharge Permits.

Similar to above, for painting and striping, asset manager shall:

- Schedule painting, marking, and striping projects during dry weather only. Cease all activities when rain threatens.
- Use thermoplastic markings in place of paint whenever feasible.
- Block nearby storm drain inlets (within 25 feet and/or down gradient of project).
- Promptly clean up any spills of paints, cleaners or other chemicals.

For re-surfacing or paving, asset manager shall:

- Re-seal or pave only on dry days when no rain is expected.
- Cease all activities when rain threatens, if possible, transfer, store, pre-heat and load hot asphalt far away from storm drain inlets.
- Protect or block downstream storm drain inlets (within 25 feet) from debris from maintenance work (asphalt cap, chip sealing, concrete breaking, or saw cutting).
- Leave covers or berms in place until the job is complete.

For bridge repair work, asset manager shall perform the following pre-cautions:

- When working on bridges, transport and store paint and materials in containers with secure lids.
- Do not transfer, store or load paint on a bridge.
- Capture waste, scraps, rust or paint from sanding or painting projects. It may be necessary to suspend nets or tarps below the bridge to catch falling debris. If sanding or sand blasting, use a vacuum bag attachment.

**Cost-effective methods and procedures for repairing various types of roads**, including concrete roads, asphalt roads, TST (Thin Surface Treatment) roads, and tuff paver roads, can vary depending on the extent of damage, local conditions, and available resources. Here are some general cost-effective approaches for repairing these different road types:

**Concrete Roads:**

- Pothole Filling: Clean and prepare potholes, then fill them with suitable concrete patching materials. Proper compaction and curing are essential for a durable repair.
- Joint and Crack Sealing: Identify and seal joints and cracks with specialized sealants to prevent water infiltration and further deterioration.
- Resurfacing: Apply a thin concrete overlay to restore surface quality and improve skid resistance.
- Full-Depth Patching: For deeper damage, remove and replace the damaged concrete section, ensuring proper compaction and bonding between old and new concrete.

**Asphalt Roads:**

- Pothole Patching: Clean potholes, apply hot mix asphalt or cold mix asphalt patching material, and compact it thoroughly.
- Crack Sealing: Fill cracks with appropriate asphalt sealants to prevent water penetration and extend pavement life.
- Overlay: Apply a new layer of asphalt on top of the existing pavement to address surface distress and provide improved riding quality.
- Milling and Resurfacing: Milling removes a portion of the old asphalt surface, and then a new layer of asphalt is applied, saving costs and preserving structural integrity.

**TST (Thin Surface Treatment) Roads:**

- Slurry Seal: Apply a mixture of emulsified asphalt, fine aggregate, and water to improve road surface quality and protect against oxidation and water damage.
- Micro surfacing: A similar process to slurry seal but using higher-quality materials, micro surfacing can enhance skid resistance and durability.
- Chip Seal: Apply a layer of emulsified asphalt and aggregate chips to seal the road surface and provide added skid resistance.
- Fog Seal: Apply a light layer of diluted asphalt emulsion to rejuvenate and protect the road surface.

**Tuff Paver Roads:**

- Paver Block Replacement: Identify and replace damaged or sunken paver blocks with new ones to ensure a smooth and even road surface.
- Joint Refilling: Refill the joints between paver blocks with suitable jointing materials to prevent weed growth and maintain stability.
- Surface Releveling: Adjust uneven paver blocks to restore a consistent road surface by adding or removing bedding material beneath the blocks.
- Regular Maintenance: Implement a routine maintenance schedule, including sweeping, cleaning, and minor repairs, to extend the life of tuff paver roads.

**Additional Considerations:**

- Prioritize repairs based on the severity of damage and traffic volume to maximize cost-effectiveness.
- Utilize locally available materials and resources to minimize transportation costs.
- Incorporate preventive maintenance strategies to address issues early and avoid costly repairs.

- Collaborate with local agencies, contractors, and communities to ensure efficient and effective road repair projects.

Remember that road repair approaches may vary depending on specific regional and local conditions, so it's essential to tailor the methods to suit the context and needs of each project. Regular monitoring, timely interventions, and proper maintenance practices are key to ensuring the longevity and cost-effectiveness of road repair efforts.

#### **Improvement Of Road Drainage:**

Regular cleaning: Maintain ditches, culverts, and drainage channels free from debris, sediment, and vegetation to ensure unobstructed water flow.

Inspections: Conduct routine inspections to identify and address drainage issues promptly.

### **5.2.7 Buildings**

For building infrastructure such as MC offices, shops, residential buildings, slaughter house, library etc., asset managers shall develop asset management plans while giving due considerations to different aspects such as following checks shall be performed for checking of leaks in roof or leaks in pipes or cracks in the building infrastructure:

- Check roofs and gutters visually for any damages at least once in a year.
- Check for termites in the old buildings and resolve where present.
- Underground drains and all pipes, including process pipes of service floor area shall be checked and cleaned as and when required. Checking shall be carried out at least once in the year.
- Cracks in the wall and false ceiling shall be checked visually once in three months.
- If required repairs shall carry out either by in-house resources or outsourced to a competent vendor

With regard to light, fixtures, Solar Panels following activities shall be performed:

- Inspection of lights, fixtures, solar panels shall be carried out after completion of six months.
- Required repairs shall perform in the affected areas.

With regard to painting of building, following factors shall be considered:

- Carryout the painting work after any modification in civil work.
- Paint the building from outside with cement-based external acrylic paint and white apex paint. Carryout the painting at least once in four years.
- Piping shall also be painted to avoid rusting as and when required,

# 06 Monitoring & Evaluation of IDAMP

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## 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/Administrator).

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.

**Annexure**

**Form IDAMP - 1**

<i>Form IDAMP -1</i>	
<b>Municipal Committee</b>	
<b>Request for IDAMP Manual Amendment Form</b>	
MC:	_____
Originating Wing/Department:	_____
Part Reference:	_____
Section Reference:	_____
Sub Section Reference:	_____
Brief description of issue	_____
_____	
Existing Procedure:	" _____
_____	
Proposed Procedure:	" _____
_____	
Justification / Rationale for Change	_____
_____	
_____	
<b>Chief Officer</b>	_____
	Signature
	_____
	Date
<b>Chairman / Administrator</b>	_____
	Signature
	_____
	Date
<b>PMDFC</b>	Recommended / Rejected
Reason for Rejection: (if Any)	_____
	_____
	_____
<b>Secretary LG &amp; CD</b>	Approved / Rejected
Reason for Rejection: (if Any)	_____
	_____
	_____

Form IDAMP – 2.1

**Project Proposal Proforma - New Asset**

District Council

Municipal Unit (Defunct MC)

Project ID

Project Title

Asset Category

Project Type Rehabilitation Replacement New Assets

Rational of Project

Rehabilitation/ Replacement	New Assets
Asset has reached its replacement year	Enhancement of service delivery in existing service areas
Asset have condition rating D or F	Extensions in boundary of service area
Asset has high risk of failure	Cover the LOS gap
Statutory/ regulatory direction for rehabilitation	Statutory/ regulatory direction for new assets
Efficiency improvement initiatives	

**Project Specifications**

Disposal Station

Particulars	Type of Project	Existing (incase of replacement/ rehab)		Proposed		
		Inst. Capacity	Actual Capacity	Capacity	Motor size	Make

**Project Costing**

Capital Cost

Asset Type	Estimated Cost (Rs.)	2022-23 (Rs.)	2023-24 (Rs.)	2024-25 (Rs.)	Throw forward (Rs.)

Annual Operations and Maintenance Requirments

Total Annual O&M Requirements (Rs.)

NPV=PV of benefits- PV of costs	Rs.	
FIRR= $12 + [NPV @ 12\% \div (NPV @ 12\% - NPV @ 20\%)] \times (20-12)$	%	
BCR= Total Benefits ÷ Total Costs	Ratio	
PBP= Capital costs ÷ Annual Net Benefits	Years	



Form IDAMP – 2.2

Project Proposal Proforma - Existing Asset							
District Council							
Municipal Unit (Defunct MC)							
Project ID							
Project Title							
Asset Category							
<u>Project Type</u>		Rehabilitation	Replacement			New Assets	
<u>Rational of Project</u>							
Rehabilitation/ Replacement				New Assets			
Asset has reached its replacement year				Enhancement of service delivery in existing service areas			
Asset have condition rating D or F				Extensions in boundary of service area			
Asset has high risk of failure				Cover the LOS gap			
Statutory/ regulatory direction for rehabilitation				Statutory/ regulatory direction for new assets			
Efficiency improvement initiatives							
Project Specifications							
<u>Sewerage network projects</u>							
Particulars	Existing (incase of Replacement/Rehab)				Proposed		
	AMS ID	Diameter (inch)	Mateial	Length (m)	Diameter (inch)	Mateial	Length (m)
Project Costing							
<u>Capital Cost</u>							
Asset Type	Estimated Cost (Rs.)	2022-23 (Rs.)	2023-24 (Rs.)	2024-25 (Rs.)	Throw forward (Rs.)		
<u>Annual Operations and Maintenance Requirments</u>							
Total Annual O&M Requirements (Rs.)							

Form IDAMP – 3

Integrated Development & Asset Management Plan (IDAMP)			
Annual Operation & Maintenance (O&M) Cost			
IDAMP Years: Year 1, Year 2 and Year 3			
MC		Assest Manager	
Sub Department		Assest Manager	
Asset Category		Assest Manager	
	Year 1	Year 2	Year 3
<b><u>Annual Operational Cost</u></b>			
Relevant Oprational Costs	-	-	-
(As per OEM / AMP)	-	-	-
<b>Sub Total</b> (A)	-	-	-
<b>Annual Repair &amp; Maintenance Cost</b>			
Relevant R&M Costs	-	-	-
(As per OEM / AMP)	-	-	-
<b>Sub Total</b> (B)	-	-	-
<b>Annual O &amp; M Cost</b> A+B	-	-	-