

# **OVERSTRAND MUNICIPALITY DIRECTORATE: COMMUNITY SERVICES**



## **MAINTENANCE MANAGEMENT POLICY**

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## **1. OBJECTIVE**

- 1.1 To ensure the proper maintenance of the infrastructure assets of the municipality as captured in the Asset Management Policy of Overstrand Municipality.
- 1.2 To benchmark the maintenance management approach of Overstrand Municipality in the relevant Government guidelines.
- 1.3 The policy will only apply to the ongoing maintenance of infrastructure assets, and excludes any capital renewal expenditure.
- 1.4 The policy will be reviewed annually.
- 1.5 The policy will be implemented in a phased manner, with proposed implementation dates shown in Appendix A.

## **2. BACKGROUND**

- 2.1 The Asset Management Policy of Overstrand Municipality describes the procedures for the:
  - (a) proper recording of assets from authorisation to acquisition and to subsequent disposal,
  - (b) providing for safeguarding procedures,
  - (c) setting proper guidelines as to authorised utilisation
  - (d) and prescribing for proper maintenance.
- 2.2 Paragraph 11.20 of the Asset Management Policy also states that “Every director shall be directly responsible for ensuring that all assets are properly maintained and in a manner which will ensure that such assets attain their useful operating lives”.
- 2.3 Whilst the policy therefore captures a mandate for the maintenance of the infrastructure assets of the municipality, there is a need to further articulate this mandate based upon leading practice and applicable Government guidelines.
- 2.4 This maintenance management policy therefore represents the approach to be followed by the Directorate of Community Services to comply with the Asset Management Policy of Overstrand municipality..
- 2.5 The policy applies to infrastructure assets, and includes:
  - (a) Water & sanitation assets
  - (b) Roads, sidewalks, paths and transportation assets
  - (c) Solid waste assets

- (d) Storm water assets
- (e) Building assets
- (f) Community facilities

### 3. ABBREVIATIONS

Term	Description
CMMS	Computerised Maintenance Management System
DPLG	Department of Provincial & Local Government, now the Department of Cooperative Government and Traditional Affairs (COGTA)
IIMM	International Infrastructure Management Manual (2006)
KPI	Key Performance Indicator
MFMA	Municipal Finance Management Act
NIMS	National Infrastructure Maintenance Strategy
O&M	Operation and maintenance
WSDP	Water Services Development Plan
WSP	Water Services Provider

### 4. DEFINITIONS

Term	Description
Asset Life-Cycle	The cycle of activities that an asset goes through – including planning, design, initial acquisition and/or construction, cycles of operation and maintenance and capital renewal, and finally disposal.
Availability	The proportion of total time that an asset is capable of performing its intended functions.
Benchmarking	The process of comparing the performance of Overstrand Municipality with other municipalities, as well as leading practice in order to identify performance gaps.
Condition-based / predictive maintenance	Maintenance performed as a result of the condition of an asset. Condition based maintenance is a type of planned maintenance activity.
Corrective maintenance	Maintenance actions performed as a result of failure of an asset including the modification or re-design of the asset.
Deferred maintenance	Maintenance activities that were not carried out.
Maintenance	All actions necessary for retaining an asset as near as possible to its original condition, excluding rehabilitation or renewal.
Maintenance plan	Information, policies and procedures for the optimal maintenance of an asset or group of assets
Maintenance standards	The standards set for the maintenance service, usually contained in preventative maintenance schedules, operation and maintenance manuals, estimating criteria, statutory regulations and mandatory requirements, in accordance with the maintenance outcomes.
Operation	The process of utilising an asset which will consume resources such as manpower, energy, chemicals and materials.
Planned maintenance	Planned maintenance falls into three categories: 1. Periodic – Activities necessary to ensure the reliability or to sustain the

Term	Description
	<p>design life of an asset. This includes the regular services required for certain assets.</p> <p>2. Predictive – Condition monitoring activities used to predict failure</p> <p>3. Preventative – Maintenance that can be initiated without routine or continuous checking and is not condition-based.</p>
Maintenance/ Refurbishment	Actions that will restore or maintain the originally assessed future economic benefits or service potential that an entity can expect from an asset and is necessary for the planned life to be achieved.
Reliability Centred Maintenance	A structured process to determine the maintenance strategies required for an asset to ensure that it continues to fulfil its intended functions within the current operating context.
Routine maintenance	Day-to-day operational activities to keep the asset operating and which form part of the annual operating budget.
Run-to-Failure	A maintenance strategy where no routine maintenance is performed and the asset is used until it fails.
Service maintenance	Service undertaken seasonally or annually to enable the required level of service to be delivered. Service maintenance is a type of planned maintenance activity.
Unplanned maintenance	Corrective work required in the short-term to restore an asset to a working condition.

## 5. STATUTORY AND REGULATORY FRAMEWORK

5.1 In addition to the Statutory and Regulatory Framework contained in the Asset Management Policy, the following documents are relevant, and were used as key inputs for this policy:

(a) MFMA Local Government Capital Asset Management Guideline published by the National Treasury Department (2008).

(b) DPLG “Guidelines for Infrastructure Asset Management in Local Government” (2007).

(c) NIMS, approved by the National Cabinet (2006).

(d) International Infrastructure Management Manual co-authored by Institute of Municipal Engineering of Southern Africa IMESA (2006).

5.2 The implications for infrastructure operation and maintenance by Overstrand Municipality, as articulated in the documents listed in 5.1 are documented in Appendix B.

## 6. COMPILATION OF MAINTENANCE MANAGEMENT PLANS

6.1 In terms of the Maintenance Management Policy, Maintenance Manager will be compiled for all services included under the policy. The maintenance Management Plans will address the following 5 aspects: M 3 / 006

- (a) Establishment of asset maintenance operational plans
- (b) Preparation of asset maintenance budgets
- (c) Establishment of an asset maintenance organisation
- (d) Establishment of asset maintenance systems
- (e) Establishment of asset maintenance performance norms and standards and reporting mechanisms

6.2 Sections 7 to 11 provide details of the contents of the Maintenance Management Plans for each of the 5 aspects.

## **7. UNDERTAKE ASSET MAINTENANCE OPERATIONAL PLANNING**

7.1 Asset maintenance operational planning will be undertaken for all assets covered by this policy with due consideration of the following:

- (a) Definition of maintenance outcomes
- (b) Conducting a maintenance analysis for all infrastructure assets, including:
  - 1. Identification of all assets
  - 2. Identification of critical assets based upon the risk of failure to the municipality
  - 3. Analysing the maintenance options and determining the preferred option in terms of the lowest life-cycle cost.
- (c) Development and implementation of a maintenance operational plan.
- (d) Analysis of asset performance.

7.2 Maintenance outcomes

- (a) Maintenance outcomes must be agreed and documented for every service.
- (b) The maintenance outcomes must be documented for each of the following categories:
  - 1. Statutory compliance, e.g. adherence with outflow quality requirements.
  - 2. Availability of the service, e.g. time taken to restore service after a disruption.
  - 3. Reliability of the service, e.g. the number of times within a period that consumers do not have access to the service.
  - 4. Cost of maintenance.

## 5. Risk management.

*M 3 / 007*

- (c) The maintenance outcomes defined will be based upon various documents adopted by Overstrand Municipality, such as the various Consumer Service Charters.

### 7.3 Maintenance analysis

#### (a) Identification of assets

1. The existing infrastructure asset register will be used as the basis for the identification of all assets, and care will be taken to update the register to reflect any new assets created, retired or changed in any way.
2. Assets will be grouped into categories for which the maintenance actions are similar. (A proposed categorization is included in Annexure C)

#### (b) Identification of critical assets based upon the risk of failure to the municipality

1. Assets will be evaluated to determine the consequence of failure with regards to the following impacts:
  - i. Environmental impact
  - ii. Public health & safety impact
  - iii. Financial impact
  - iv. Service delivery impact

2. The impact with regards to each of the criteria will be rated using a 5 point scale.

3. The individual ratings will be combined into a combined rating, which will be used to identify the relative criticality of maintaining specific assets.

#### (c) Analysing the maintenance options and determining the preferred option in terms of the lowest life-cycle cost.

1. A maintenance strategy will be selected for each of the asset groups defined in 7.3 (a) 2.

2. Examples of asset maintenance strategies are included in Appendix D.

#### 7.4 Maintenance operational plan development

(a) The maintenance activities for each asset group defined will be combined in an activity maintenance plan that will list the following:

1. Description of the asset in sufficient detail for the accurate identification of the asset
2. Description of the type of activity to be performed, e.g. testing, inspection, oil change etcetera.
3. The criticality of the activity. **M 3 / 008**
4. The base period of the activity, e.g. monthly, annually etcetera.

(b) Maintenance activities recorded in existing documents of Overstrand Municipality will be incorporated into the activity list. These include:

1. Activities recorded in the WSP assessment document
2. Activities recorded in current checklists and operating manuals
3. Others as identified.

#### 7.5 Analysis of asset performance.

(a) Overstrand Municipality will use tools to monitor the performance of assets, where it is appropriate for such tools to be employed. These could include:

1. Root Cause Analysis tools to assess the underlying reasons for asset failure.
2. Undertaking Reliability Centered Maintenance assessments.
3. Others as identified.

## 8. PREPARATION OF ASSET MAINTENANCE BUDGETS

8.1 The costs associated with the maintenance activities in the maintenance activity plan must be calculated.

8.2 The individual maintenance activity costs must be summarised per department and used to inform the required maintenance budgets.

8.3 Where available maintenance budgets are inadequate the criticality of the individual activities will be used to prioritise the maintenance actions to be performed.

8.4 Maintenance activities that cannot be funded will be classified as deferred maintenance and recorded as such.



- 8.5 Expenditure on maintenance will be recorded against the assets, facilities and cost centres where the cost is incurred.

## **9. ESTABLISHMENT OF AN ASSET MAINTENANCE ORGANISATION**

- 9.1 The maintenance activity schedule will be used to inform the maintenance organisational structure required to perform the critical work to be executed.
- 9.2 The maintenance activity schedule will also be used as the basis to determine the tools and other equipment required to perform the required maintenance.
- 9.3 The outsourcing or use of alternative delivery mechanisms to perform maintenance tasks, or groups of maintenance tasks, must be considered as an alternative to the creation of in-house capacity. **M 3 / 009**

## **10. ESTABLISHMENT OF ASSET MAINTENANCE SYSTEMS**

- 10.1 The maintenance activities will be scheduled and controlled using an appropriate system(s), such as a CMMS.
- 10.2 The maintenance system(s) must include the following functionality:
- (a) Recording of progress against activities and activities closed or re-programmed.
  - (b) Recording of maintenance costs, time and other resources consumed against assets and facilities.
  - (c) Include links to the financial management system so that reconciliation of maintenance budgets can be done.
  - (d) Built-in maintenance analysis tools or ability to export information to other applications, to enable maintenance analyses to be undertaken.
  - (e) Analysis of asset performance to be used as an input to maintenance planning.
- 10.3 A link will be established between the maintenance management system and the customer complaints system (EMIS), which is one of the main originating points for unplanned maintenance activities.

## **11. ESTABLISHMENT OF ASSET MAINTENANCE PERFORMANCE INDICATORS AND REPORTING MECHANISMS**

- 11.1 Appropriate KPI's will be identified and used to monitor the maintenance performance of Overstrand Municipality.

11.2 The maintenance management KPI's will be drawn from the Service Delivery & Budget Implementation Plan and Performance Management System of Overstrand Municipality, where possible.

<b>POLICY SECTION:</b>	Operational Services
<b>CURRENT UPDATE:</b>	
<b>PREVIOUS REVIEW:</b>	
<b>APPROVAL BY COUNCIL:</b>	31 August 2011

## APPENDIX A – IMPLEMENTATION PROGRAMME

- |   |                    |
|---|--------------------|
| 1. Approval of Maintenance Management Policy                | 31 August 2011     |
| 2. Critical assets  |                    |
| a. Identify critical assets                                 | Sep 2011           |
| b. Develop operational plans for critical assets            | Nov '11 - Jan 2012 |
| c. Review resources for critical asset plans                | Feb - Mar 2012     |
| d. Finalise maintenance management plan for critical assets | Apr 2012           |
| 3. Other assets   |                    |
| a. Identify other assets                                    | Aug - Sep 2012     |
| b. Develop operational plans for balance of assets          | Nov '12 -Feb 2013  |
| c. Review resources for balance of assets                   | Mar - Apr 2013     |
| d. Finalise maintenance management plan for other assets    | May 2013           |

## APPENDIX B – DESCRIPTION OF OPERATION AND MAINTENANCE IMPLICATIONS OF VARIOUS DOCUMENTS FOR OVERSTRAND MUNICIPALITY

### (a) Local Government Capital Asset Management Guideline (2008):

1. P21 - Effective asset management will maximise the service potential of existing assets by ensuring that they are appropriately used; maintained, safeguarded and that risks are mitigated.
2. P22 - The municipality should adopt an integrated approach to asset management which includes formulating an asset management strategy consisting of detailed plans for acquisitions and replacements, operation and maintenance as well as disposals in terms of the municipality's policies.
3. P25,26 – The lifecycle costs of infrastructure must be considered in order to ensure that they are properly funded. In terms of operation and maintenance-phase costs, the following cost categories are defined:
  - a. Operation - fuel or energy costs, operational labour, security costs, safety costs, training costs, performance monitoring costs, cleaning costs and consumables.
  - b. Maintenance - spare parts and repair labour.
  - c. Administration (asset specific) - insurance, rates and taxes, management fees, etc.
  - d. Rehabilitation and renewal - upgrade costs, modification costs if this improves asset life (capital), re-training costs (current), etc.
  - e. Asset-related receipts – tariffs, rates and equitable share (only to the extent that it relates to this asset acquisition).
4. P37 – 43 contains a detailed description of the activities to be performed during the Operation and Maintenance phase of infrastructure, of which the following are highlighted;
  - a. The accountability for the maintenance of assets must be clearly defined.
  - b. Issues related to operation and maintenance of infrastructure assets must be reported.
  - c. Policies and plans that define the operation actions and budgets must be drawn up. These plans must include consideration of the nature of the assets and the risk associated with asset failure.
  - d. Detailed maintenance strategies must be compiled that:

- i. defines the asset, the performance required of it, and the level to which it is to be maintained;
  - ii. identifies the risks associated with the chosen strategy in terms of service delivery in the event of asset failure;
  - iii. describes the systems (not specifically IT) and procedures to be used to plan and manage the maintenance work;
  - iv. specifies the types of maintenance to be carried out (in-house or outsourced), and why; **M 3 / 012**
  - v. nominates the means of resourcing and implementing maintenance;
  - vi. indicates any requirements for in-house spare parts and any specialist equipment needed to maintain certain assets; and
  - vii. outlines the projected costs of routine (and corrective/preventive) maintenance and forecasts major replacements for the next 5–10 years, depending on the type of asset.
- e. The development of the maintenance strategies must consider both the level of maintenance required, as well as the maintenance priorities.
- f. The maintenance strategies developed must be converted to operation and maintenance plans.
- g. The operation plan must consider the following:
  - i. resources required to operate and maintain assets;
  - ii. responsibility for, control of, access to, and security of the asset (Logistics Management);
  - iii. operating policies (i.e. working hours, security, cleaning, energy management and the like);
  - iv. the level and standard of performance required of the asset;
  - v. arrangements for collecting, monitoring and reporting performance data;
  - vi. training staff in use of the asset; and
  - vii. estimates of operating costs.
- h. The Maintenance Plan must consider the following:
  - i. definition of maintenance standards;
  - ii. allowance for the rectification of existing defects;

- iii. description of the work to be carried out; and
  - iv. forecast of the necessary maintenance, major repairs and preventative maintenance expenditure for the planning period.
- i. The municipality's maintenance policy must make provision for the necessary types of maintenance required, such as planned- and unplanned maintenance.
5. P71 – The asset register must capture information on the maintenance and operational history of assets, as captured in the maintenance systems.

(b) DPLG “Guidelines for Infrastructure Asset Management in Local Government”

- 1. P2-6 – The municipality's asset management strategy must define key infrastructure management processes and procedures, including the preparation of an operation and maintenance plan for each network.
- 2. P4-6 – An important element in asset management plans is the consideration of lifecycle needs including operation and maintenance requirements.
- 3. Annexure D provides a template for the development of operation and maintenance budget estimates.

**(c) NIMS**

1. The document has been approved by National Cabinet and therefore provides a very strong mandate for infrastructure maintenance to be undertaken.
2. P13 – Initiatives are underway to strengthen the regulatory framework governing planning and budgeting for maintenance and the adoption of a maintenance management policy by Overstrand Municipality conform to this strategic direction.
3. P15 – Interventions will be introduced to assist municipalities with establishing norms and standards for maintenance of different types of infrastructure, as well as putting in place appropriate capacity building programmes and other support programmes.
4. P16 – The creation of work, and development of small contractors, through the development of a maintenance industry is identified as a priority.
5. P16 – The reporting on maintenance issues is identified as a priority.

**(d) IIMM**

The IIMM represents best practice asset management methodologies. It forms the base for the Guidelines documented in (b) above. In addition, the following is particularly relevant for O&M of infrastructure assets at Overstrand Municipality.

1. Section 3.6 contains a detailed description of maintenance management planning approaches, and which will be used as the basis for the implementation of proper infrastructure maintenance approaches at Overstrand Municipality.

## APPENDIX C – ASSET MAINTENANCE CATEGORIZATION

### **Water Assets**

1. Bulk supply schemes
  - a. General facility
  - b. Boreholes
  - c. Raw water dam
  - d. Raw water pump station
  - e. Pre-chlorination installations
  - f. Chemical dosing installations
  - g. Inlet towers
  - h. Flocculation channels
  - i. Settling tanks
  - j. Sand filters
  - k. Pump stations
  - l. Chlorine dosing plants
  - m. Filter wash water sumps
  - n. Sludge treatment and disposal facilities
  - o. Flow meters
  - p. Rising mains
  - q. Reservoirs
  - r. Valves
2. Water reticulation networks
  - a. Pipe network
  - b. Gate valves
  - c. Hydrants
  - d. Water meters
  - e. Valves

### **Sanitation Assets**

1. Sewer reticulation
  - a. Pipe network
  - b. Pump stations
  - c. Septic tanks and French drains
  - d. Manholes



2. Sewer treatment works
  - a. General facility
  - b. Aeration facilities
  - c. Submersible pumps
  - d. Centrifugal pumps
  - e. Inlet screens
  - f. Grit removal systems
  - g. Flow measurement systems
  - h. Sedimentation systems
  - i. Sludge treatment systems
  - j. Sludge dewatering systems
  - k. Biological treatment systems
  - l. Oxidation / maturation ponds
  - m. Balancing tanks
  - n. Chemical phosphate removal systems
  - o. Disinfection systems
  - p. Anaerobic digestion systems

### **Roads, sidewalks, paths and transportation assets**

1. Paved roads
  - a. Surface layer
  - b. Structural layer
  - c. Kerbing
2. Unpaved roads
  - a. Surface layer
  - b. Structural layer
  - c. Kerbing
3. Footpaths / sidewalks
  - a. Surface
4. Structures
  - a. Bridges
  - b. Retaining walls
5. Transportation assets (Street furniture)
  - a. Overhead signs / signal gantries
  - b. Street signs
  - c. Traffic signals

- d. Guard rails
- e. Bus stop shelters
- 6. Parking areas
  - a. Surface

**Solid waste assets**

- a. Landfill sites
- b. Bins
- c. Bulk containers
- d. Transfer stations
- e. Weighbridge

**Storm water assets**

- α. Lined open channels
- β. Unlined open channels
- χ. Pipes
- δ. Manholes
- ε. Pump stations
- φ. Attenuation ponds
- γ. Hydrological monitoring stations
- η. Erosion protection

**Building Assets**

- a. Offices
- b. Halls
- c. Ablutions
- d. Workshops / stores
- e. Libraries
- f. Houses
- g. Markets

**Community facilities**

- a. Sports fields
- b. Parks, Road reserves & Open spaces
- c. Cemeteries
- d. Pools
- e. Office gardens

## APPENDIX D – EXAMPLES OF ASSET MAINTENANCE STRATEGIES

Category	Type	Description
Planned	Periodic / preventative maintenance	Regular programme of maintenance tasks (including inspections).
	Condition based / predictive maintenance	Maintenance based upon the condition of an asset.
	Service maintenance	Regular servicing of assets, including services prescribed by the original manufacturer.
Unplanned	Priority repair	Maintenance to restore the function of an asset that has failed.
	Run-to-failure or "Throw away"	Assets where no maintenance is performed and the asset is discarded and / or replaced at the end of its life.
	Corrective maintenance	Maintenance actions performed as a result of the failure of an asset based upon modifications and / or re-designs identified.