

## **POLICY 024/2016 RAADSBELEID**

SUBJECT/ONDERWERP: Water Services Infrastructure Maintenance Policy

REFERENCE/VERWYSING: 16.1.1.B

RESOLUTION NO/BESLUIT NR: 30.25/06/2016

DATE/DATUM: 7 June 2016

POLICY OBJECTIVE: The Water Services Infrastructure Maintenance Policy of the //Khara Hais Municipality describes the procedures for:

- (a) setting proper guidelines as to authorized utilisation of water infrastructure assets, and
- (b) prescribing for its proper maintenance.

### POLICY PHILOSOPHY

The policy philosophy of the Water Services Infrastructure Maintenance Policy of the //Khara Hais Municipality, is:

- (a) To ensure the proper maintenance of the Water Services Infrastructure assets of the municipality;
- (b) The policy will only apply to the ongoing maintenance of infrastructure assets, and
- (c) The policy will exclude any capital renewal expenditure.
- (d) The policy will be reviewed annually.
- (e) The policy will be implemented in a phased manner.

### DEFINITION OF KEY WORDS

In this policy the following words shall have the meanings assigned as follows: -

Khara Hais/The Municipality means the //Khara Hais Local Municipality,

Council means the elected Council of the //Khara Hais Local Municipality,

Accounting Officer refers to the Municipal Manager of the municipality,

Chief Financial Officer or CFO refers to the Director of the Finance Directorate,

MFMA refers to the Municipal Finance Management Act, 2003, [Act 56 of 2003],

Minister refers to a Cabinet member responsible for Water and Sanitation,

DWS/DWA/DWAF means the National Department of Water & Sanitation

Key management personnel is defined as the Municipal Manager and all other managers reporting directly to the Municipal Manager or as designated by the Municipal Manager.

Policy refers to the Water Infrastructure Maintenance Policy of the //Khara Hais Municipality

Water Services refers to both drinking/potable water services as well as waste water/sanitation services or any part thereof

KPI Key Performance Indicator

NIMS National Infrastructure Maintenance Strategy

O&M Operation and maintenance

WSDP Water Services Development Plan

WSP Water Services Provider

## 1. POLICY OBJECTIVES

The Water Services Infrastructure Maintenance Policy of the //Khara Hais Municipality describes the procedures for the:

- (a) setting proper guidelines as to authorised utilisation of water infrastructure assets,
- (b) and prescribing for its proper maintenance.

Whilst the policy therefore captures a mandate for the maintenance of the Water Services Infrastructure assets of the municipality, there is a need to further articulate this mandate based upon leading practice and applicable Government guidelines.

This policy therefore represents the approach to be followed by the responsible Directorate(s) for ensuring that these assets are properly maintained and in a manner which will ensure that such assets attain their useful operating lives.

The policy applies to Water & Sanitation infrastructure assets.

## 2. POLICY PHILOSOPHY AND PRINCIPLES

The policy philosophy of the Water Services Infrastructure Maintenance Policy of the //Khara Hais Municipality, is:

- To ensure the proper maintenance of the Water Services Infrastructure assets of the municipality;
- The policy will only apply to the ongoing maintenance of infrastructure assets, and
- The policy excludes any capital renewal expenditure.
- The policy will be reviewed annually.
- The policy will be implemented in a phased manner.

### 3. KEY CONCEPTS AND TERMINOLOGY

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.
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:
Periodic Maintenance	Activities necessary to ensure the reliability or to sustain the design life of an asset. This includes the regular services required for certain assets.
Predictive Condition	Activities used to predict failure monitoring
Preventative Maintenance	Activities that can be initiated without routine or continuous checking and is not condition-based.

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.

3. COMPILATION OF MAINTENANCE MANAGEMENT PLANS

In terms of this Policy, Maintenance Management Plans will be compiled for all services included under the policy. The maintenance Management Plans will address the following aspects:

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

4. UNDERTAKE INFRASTRUCTURE MAINTENANCE OPERATIONAL PLANNING

Infrastructure 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:
  - Identification of all assets
  - Identification of critical assets based upon the risk of failure to the municipality

- 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.

### **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:
- (i) Statutory compliance, e.g. adherence with outflow quality requirements.
  - (ii) Availability of the service, e.g. time taken to restore service after a disruption.
  - (iii) Reliability of the service, e.g. the number of times within a period that consumers do not have access to the service.
  - (iv) Cost of maintenance.
  - (v) Risk management.
- (c) The maintenance outcomes defined will be based upon various documents adopted by the //Khara Hais Municipality, such as the various Consumer Service Charters.

### **Maintenance analysis**

- (a) Identification of assets
- (i) The existing infrastructure asset register will be used as the basis for the
  - (ii) identification of all assets, and care will be taken to update the register to
  - (iii) reflect any new assets created, retired or changed in any way.
  - (iv) Assets will be grouped into categories for which the maintenance actions are similar. (A proposed categorization is included in Annexure A)
- (b) Identification of critical assets based upon the risk of failure to the municipality.
- (c) 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.

- (d) The impact with regards to each of the criteria will be rated using a 5 point scale.
- (e) The individual ratings will be combined into a combined rating, which will be used to identify the relative criticality of maintaining specific assets.
- (f) Analysing the maintenance options and determining the preferred option in terms of the lowest life-cycle cost.
- (g) A maintenance strategy will be selected for each of the asset groups defined above.

### **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:
  - (i) Description of the asset in sufficient detail for the accurate identification of the asset.
  - (ii) Description of the type of activity to be performed, e.g. testing, inspection, oil change etcetera.
  - (iii) The criticality of the activity.
  - (iv) The base period of the activity, e.g. monthly, annually etcetera.
- (b) Maintenance activities recorded in existing documents of //Khara Hais Municipality will be incorporated into the activity list. These include:
  - (i) Activities recorded in the WSP assessment document.
  - (ii) Activities recorded in current checklists and operating manuals.
  - (iii) Others as identified.

### **Analysis of asset performance**

//Khara Hais Municipality will use tools to monitor the performance of assets, where it is appropriate for such tools to be employed. These could include:

- (a) Root Cause Analysis tools to assess the underlying reasons for asset failure.
- (b) Undertaking Reliability Centred Maintenance assessments.
- (c) Others as identified.

## **5. PREPARATION OF INFRASTRUCTURE MAINTENANCE BUDGETS**

- 5.1 The costs associated with the maintenance activities in the maintenance activity plan must be calculated.
- 5.2 The individual maintenance activity costs must be summarised per department and to inform the required maintenance budgets.

- 5.3 Where available maintenance budgets are inadequate the criticality of the individual activities will be used to prioritise the maintenance actions to be performed.
- 5.4 Maintenance activities that cannot be funded will be classified as deferred maintenance and recorded as such.
- 5.5 Expenditure on maintenance will be recorded against the assets, facilities and cost centres where the cost is incurred.

## 6. ESTABLISHMENT OF AN INFRASTRUCTURE MAINTENANCE ORGANISATION

- 6.1 The maintenance activity schedule will be used to inform the maintenance organisational structure required to perform the critical work to be executed.
- 6.2 The maintenance activity schedule will also be used as the basis to determine the tools and other equipment required to perform the required maintenance.
- 6.3 The outsourcing or use of alternative delivery mechanisms to perform maintenance tasks, or groups of maintenance tasks, must be considered as an alternative for the creation of in-house capacity.

## 7. ESTABLISHMENT OF AN INFRASTRUCTURE MAINTENANCE SYSTEM

- 7.1 The maintenance activities will be scheduled and controlled using an appropriate system(s).
- 7.2 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.
- 7.3 A link will be established between the maintenance management system and the customer complaints system, which is one of the main originating points for unplanned maintenance activities.

## 8. ESTABLISHMENT OF INFRASTRUCTURE MAINTENANCE PERFORMANCE INDICATORS AND REPORTING MECHANISMS

- 8.1 Appropriate KPI's will be identified and used to monitor the maintenance performance of //Khara Hais Municipality.

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

9. ROLES

Council, Municipal Manager, Director Civil Engineering Services, and other delegated person(s) as applicable.

10. RELATED POLICIES

Customer Care, Credit Control, Debt Collection and Indigent Support policy, dated 30 May 2014.

Water & Sanitation Service Standards Policy (Draft).

Installation and Tempering of Pre-paid Water Meters Policy (Draft).

11. RECALLING AND/OR AMENDMENTS

None.



## ANNEXURE A

### INFRASTRUCTURE ASSET CATEGORIES

#### **Water Infrastructure**

##### 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 Infrastructure**

##### 1. Sewerage 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

2. Sewer reticulation

- (a) Pipe network.
- (b) Pump stations.
- (c) Septic tanks and French drains.
- (d) Manholes.