

THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

SOUTHERN NATIONS NATIONALITIES AND PEOPLES REGIONAL STATE

**URBAN INSTITUTIONAL AND INFRASTRUCTURE DEVELOPMENT PROGRAM (UIIDP)**

**Asset Management Plan (AMP)**

**Sawla City Administration**

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# Introduction

Asset is an item that has been purchased, and which has a life of more than a year, so that it has to be given a “book value”, i.e. a value that can be recorded and given a cost for accounting and tax purpose.

Asset management is a term used to describe a way of managing assets across their entire life cycle cost and provide for the replacement of the assets at the appropriate point in time.

Asset management is a specific approach to the management of physical assets; be they infrastructure networks, buildings or moveable assets, which bring together good technical management practice with sound financial principles. It also provides an integrative approach that links project based capital investment planning with long-term operation and maintenance needs to provide sustainable management system.

The plan also enables the City Administration to build knowledge of its infrastructure asset base.

In many cases, City Administration s/cities of our country lack the required information about their own capital assets for detailed costing of individual assets as well as for improvement planning. This is due to absence of strategic approach to asset management techniques.

The primary concern of this document is on the management of physical infrastructure in the City Administration though the management plan can be applied equally to assets supporting social infrastructure (e.g. municipal buildings, schools and clinics which are not included in this document due to the broader nature of capital assets to be assessed and planned within this limited period of time). Beside to this, although the technical approach to asset management is similar for all infrastructure services that have physical asset/capital, the way in which asset management is used as a management tool considerably vary.

The entire essence of Asset Management Plan (AMP) is that it allows the city, know at any point in time and exactly what assets it owns; what they are worth; what financial obligations are towards those assets; and what the residual life of those assets will be.

In general, Asset Management Plan provides a much more effective system for municipalities or enterprise (e.g. water) to plan their future budget than does the existing system of project planning. This is because it takes in to account all costs across the project life cycle; it gives priority to maintenance; and developing new projects. So this document provides at least some starting point of infrastructure Asset Management Plan for Sawla city.

## Objective of the AMP

The main objective of this AMP is to ensure that the city’s own assets are updated (Infrastructure Asset inventories) as per the format in the Urban Infrastructure Asset Management Plan and Operational Manual (UIAMPOM). Consequently, the result is used to produce a clearly defined and well-constructed Asset Management Plan that provides a basis for capital investment planning, maintenance budgeting, staffing needs planning and allocation as well as meeting the needs of the urban population. The specific objectives of this plan are;

* To identify the type of available infrastructure assets in the town;
* To calculate the residual cost/worth of an asset; costs/replacement rates;
* Conduct a condition and capability analysis and provide a description of capital assets;
* Identify the level and coverage of the past infrastructure expectation(demand and supply); and what needs to be done(capital and operational plans);
* Prepare AMP and prioritize infrastructure based on their level of deterioration for improvements for the subsequent fiscal year and integrate technical and financial plans;
* Creation of performance measurements, continuous monitoring and updating of changes on an annual basis;
* Link the AMP with the strategic goals and objectives of infrastructure planning and implementation(e.g. UIIDP projects);
* To meet the access criteria requirements by the World Bank for the UIIDP-projects measured as performance indicators.

## Structure of the Report

The methodological approach on the development of this Asset Management Plan, based upon a 10-step process stipulated in the AMP manual. It is also considered that at each important point in the development of AMP. Introduction and Background is added before we started the ten steps of AMP manual. This report generally structured in 12 chapters.

# Background of Sawla City Administration

The establishment of the City Administration was a response to the need of commercial by the people and the surrounding districts. Sawla was established and developed as an administrative center of GofaAwuraja since in 1952E.C.

Sawla is one of the City Administration in SNNPRS Regional state, found at 518km, 305km and 250km, from AdissAbeba, Hawassa and Arbaminch respectively. Astronomically, the City Administration is located at 6° 17' 59" N and 36° 52' 48" E. It is bordered with DembaGofaZuriaWoreda in all direction. The City Administration has a total area of 849.61 hectare and administratively sub-divided in to two sub-cities and ten kebeles.

From topographical point of views, the general elevation of the City Administration is ranges between 1250m, a, s, 1. In the south east and 1570m, a,s,1 in the North West. The average elevation is about 1410m,a,s,1.When we see the landform of the City Administration , it is surrounded by mountain ranges in the North West and steep slop and plain surface In the south and south east. The steepness of the land severely exposes the land to be affected by flood.

Climatically, the City Administration is classified in to kola/tropical zone. As a result the annual temperature of the City Administration lies between 23.5c° and 15.4c° where as the mean annual rainfall is 1309mm which is orthographic in its type.

The major ethnic groups of the City Administration include Gofa, Gamo, Amhara, Wolayita, Tigrie, and there are many other ethic groups living together with affection, peace and love. Moreover there are many religious living together.

Population; Based on the data obtain from CSA, 2009, the current population of the City Administration is estimated to be 54,801 and out of these 26,852 is male and 27,949 is female. Population growth rate of the City Administration is 4.3%per a year.

Social Infrastructure; According to education data taken from City Administration, the City Administration has; 3kindergartens quarters, primary, two collages (one private and government or construction and industrial) .Regarding the number of health institution in the City Administration , there are thirteen private clinics, one veterinary pharmacy and three human pharmacies, one governmental health station, and one Hospital. With regard to transpiration and communication there is one bus station, one telecommunication station and one postal station. As far as recreation centre is concerned, the City Administration has one youth, one stadium and there are many video and cinema house, which are owned by private.

Even though the City Administration has market place, it is not modern and well organized for the residents of the City Administration.

Generally the existing social infrastructures of the City Administration do not meet the demand of the residents of the City Administration .This document is mainly focussed on asset management plan for the City Administration of Sawla. It will be required to provide and maintain an asset management plan for urban net-work infrastructure services. This asset management plan is limited to the following major network and social infrastructure categories such as: -urban road, urban drainages, water supply, sanitation and solid waste management, sanitation and liquid waste management facilities,public market, abattoir, greeneries and beatification and street lighting.

# Step-1. Build the GIS project and data management structure

## Geo-spatial data for the City

Geo spatially Sawla city Administration is located at 6° 17' 59" N and 36° 52' 48" E. It has has about 7 1st  order control points , 12 2nd order control points and 49 3rd  order control points, totally the city has 68 control points. The Arial photo used in the GIS project is already geo-referenced at regional level. So there is no problem related to the spatial coordinates used for the GIS project in the city.

## The GIS project

The coordinate reference system and the projection used for the project is as follows.

Projected Coordinate System: Adindan\_UTM\_Zone\_37N

Projection: Transverse Mercator

false easting: 500000.00000000

false northing: 0.00000000

central meridian:39.00000000

scale factor: 0.99960000

latitude of\_ origin:0.00000000

Linear Unit: Meter

## The backdrop image

The type of image acquired and used to the AMP project is Arial photo which is recent and taken in Tahisas 2008 E.C.The image is geo referenced at regional level and distributed to Administration cities of the regions for Planning purposes. So we used this opportunity for our AMP project.

##### 



Figure 1.1 The back drop image of the city (sample)

## The database structure

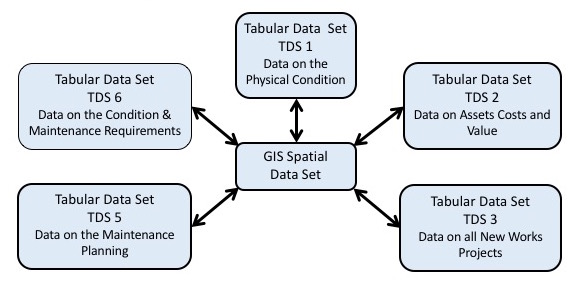
The relational diagram showing the different databases and the way that they relate to the core (spatial) database is almost the same with that of the diagram described in step 1 of the AMP manual.

Figure 1.2 Relational diagram of the attribute databases used for the AMP

## The computer directory management system

The full directory structure used on the computer for managing the GIS project is organized based on convenience to the management.

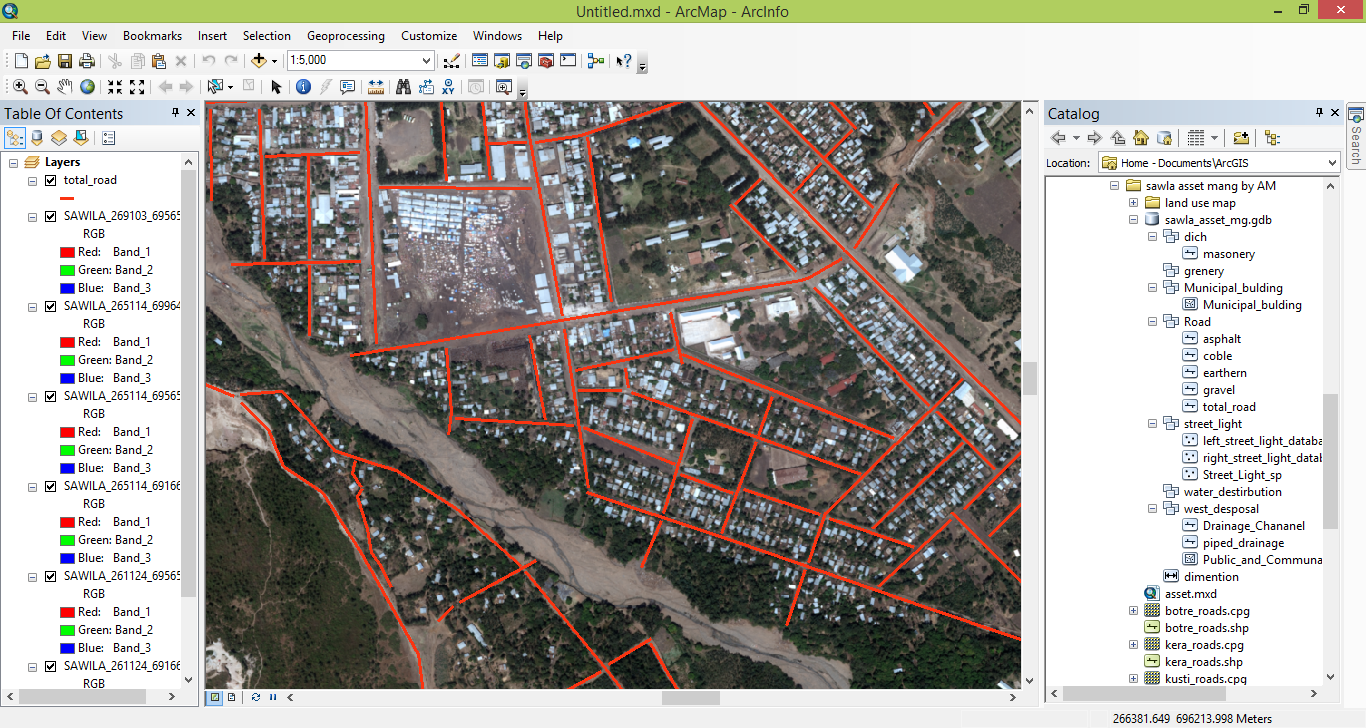
* The tabular data is created directly on the geo-database.
* Images are also stored in the asset folder where the geo-database is created.
* .The geo-database is arranged and created based on the four strategic areas.
* The feature datasets are arranged as existing and new assets.
* Feature classes are created on the feature datasets based on their strategic area categories.
* The maintenance and condition table is created for all assets and saved in the strategic area category geo database.
* The valuation table is created for each feature class and been saved in the geo data base
*  Both the maintenance and the valuation tables of all features are linked with the relationship mechanism and saved in the relevant geo data base ,

Figure 1.3 The full directory structure of the GIS Project

# Step-2.The institutional framework and the asset management structure

## 2.1 The institutional framework

Figure 2.1 The institutional framework

## 2.2 Situating the AMP within the city Administration

The situation of AMP team with in the city Administration. The office of the team is at the UIIDP office in the municipality.

## 2.3 AMP staff

The AMP team comprises two persons, one focal person and one assistants.

Table 2.1 The AMP team

|  |  |  |  |
| --- | --- | --- | --- |
| No | Name | Job title | Remark |
| 1 | Zelalem Zekarias | Organizing the overall works and the GIS(Geomatics Engineer) | 0916303193 |
| 2 | Elias Aga | Civil Engineer,Project Manager(PM) | 0911881242 |
| 3 | BehailuTagese | (Quantity Survey) Civil Engineer | 0916387676 |
| 4 | Mugute Mugala | Supplying water supply data | 0916489454 |

## 2.4Responsibilities of the AMP unit

The AMP unit has the following responsibilities:

* The annual preparation of the AMP report for the City.
* Establishing and managing the AMP GIS project.
* Establishing and managing all the attribute databases associated with the GIS project, as described in step 1 of the AMP manual.
* Carrying out and maintaining the inventory of the City’s assets, updating this annually.
* Carrying out a condition analysis of all assets annually
* Maintaining a record of unit rates for all assets included in the asset management plan.
* Building and maintaining a list of normal maintenance activities for all feature classes of assets included in the City’s AMP.
* Building a list of assets that have a maintenance deficit, and assembling this list into a total maintenance deficit that includes all of the City’s assets.
* Building a list of assets that require rehabilitation or decommissioning.
* Working with the CIP team to develop a list of new works projects and managing the new works projects database.
* Developing and prioritizing a list of maintenance activities for implementation.
* Managing the tracking process for new works projects from approval through construction, and their transfer to the existing database
* Managing the tracking process for maintenance activities from approval through construction, and their transfer to a change in the condition indicator
* Managing the recording of progress of projects and maintenance activities against target and providing a report on performance.

## 2.5 The qualifications of the AMP focal person

Given the critical role that the AMP focal person plays in the City Administration, the position requires a person with ability, initiative, and a range of different skills. Key skills include:

* A good operational knowledge of GIS, and preferably the Arc Info system of GIS. The Federal Government provides training in GIS specifically for the AMP, but the focal person should have the pre-requisite knowledge of basic GIS operation to be able to attend this training program.
* A good working knowledge of relational database management.
* Knowledge of the basic principles of surveying and the ability to work with maps in a geo-spatial environment.
* A working technical knowledge of infrastructure and buildings.
* Knowledge of how infrastructure deteriorates and how it is maintained.
* A knowledge of how to build cost estimates.

In addition to the AMP focal person, the other assistant members are professionals of the work area.

## 2.6A list of categories of assets included in the AMP, and a strategic activity area of each category.

Table 2.2 list of categories of assets included in the AMP

|  |  |  |  |
| --- | --- | --- | --- |
| **The Movement Network** | **The Water Supply Network** | **Environmental Services** | **Social and Economic Services** |
| Roads | Pumps | Urban drainage | Abattoirs |
| Footpaths; pavements | Reservoirs | Liquid waste | Fire service |
| Street lighting | The distribution network | Sanitation | Municipal markets |
| Culvert | The transition network | Solid waste | MSE facilities |
| Bridge | Public standpipe | Urban Greenery | Schools |
|  | Access boxes | Parks and play areas | Health clinics |
|  | Water meters | Rivers | Youth centres |
|  |  | Retaining wall | Other |

## Departmental responsible for the AMP in each asset category

Table 2.3 Departmental responsible for the AMP in each asset category

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Categories of Assets | Responsible Body | Responsible Person/Group | Remarks |
| 1 | Roads | Infrastructure provision & Administration Processes of the Municipality | Team Members of the process | Infrastructure provision & Administration Processes is responsible to open new roads based on the City’s Structure plan & LDP and also it is responsible for construction, maintenance & management |
| 2 | Urban Drainage Systems. | Infrastructure Processes of the Municipality | Team Members of the process | Responsible for construction, maintenance & management |
| 3 | Street Light | EEPCO & Design, construction,& Contract Administration & Infrastructure Processes of the Municipality | Team Members of the process & EEPCO Manager & technicians | EEPCO is responsible for maintenance, replacement & installation of new ones; whereas Infrastructure Provision & Administration Process in the behalf of the Municipality is responsible for monitoring & management of the asset |
| 4 | Water Supply Systems. | Sawla City Water supply and sanitation Enterprise | Team Members of the Enterprise | Responsible for maintenance, replacement & installation of new ones; |
| 5 | Solid and Liquid Waste Management Systems | Social & Environment dev't& Protection Service Process of the Municipality; Organized Groups &infrastructure process owner | Team Members of the process | Responsible for maintenance, & supervision containers & vehicles or carts;  Collection, transportation & safe disposal; |
| 6 | Rental Houses Managed by the Municipality (H) | Houses Development Work Process of the Municipality | Team Members of the process | Responsible for maintenance, & supervision of Low cost Rental Houses |
| 7 | Offices and Buildings of the Municipality (B) | Design, Construction,& Contract Administration of the Municipality | Team Members of the process | Responsible for construction, maintenance & Rehabilitation |

## The list of feature classes included in the AMP

## Table 2.4The list of feature classes included in the City’s AMP, allocated to the 3 GIS features

|  |  |  |
| --- | --- | --- |
| **Point Feature** | **Line Feature** | **Polygon Feature** |
| Road furniture | Asphalt road | Paved area |
| Manhole | Cobblestone road | Roundabout |
| Pump | Gravel/ red ash road | Reservoir |
| Valve | Compacted earth road | Retention and detention ponds |
| Access box | Cycle path | Landfill site |
| Water meter | Footpath | Administrative boundary |
| Hydrant | Bridge | External site boundary |
| Customer connection | Culvert | Internal boundary |
| Communal standpipe | Retaining wall | Building and facility |
| Public and communal toilet | Drainage channel |  |
| Bucket collection point | Pipe drainage |  |
| Weigh bridge | Water pipeline network |  |
| Solid waste container | River channel centre line |  |
| Lighting pole and mast | Tunnel |  |
| Construction plant | Fence and boundary wall |  |
| Machinery |  |  |
| Vehicle |  |  |

## 2.7Details of the unique identifier system used for the City’s AMP

### 2.7.1The unique identifier takes the following form:

The structure of the identifier system

**RNAS-SC-0142\_00**

Where:

* RDAS indicates that this is an asset that belongs to the category ‘Road Network’ (RN), and within that to the feature class ‘asphalt roads’ (AS). Table 2.5 provides a comprehensive list of codes covering every feature classes of assets currently present in the AMP. This is obtained from the list of codes in table below.
* SC is the code allocated to “Sawla City”.
* The first part of the 3rd code component – 0142 - is the number of a road element within the feature class ‘asphalt roads’. This is a unique number within that feature class of asset. The second part of this component would then be used if the road element was broken down further. The main use of this second part of the code is to enable the condition of linear assets to be defined to a high level of accuracy. This second part of the code would only be used for linear features. Here sub-code is 00, which indicates it is the entire length of the element. The numbers 01-09 would be reserved for specific lengths of the element used in the process of dynamic segmentation to further detail condition.

Note that the section of the code \_00 used in block three of the identifier is used only for those linear assets that use dynamic segmentation in the condition analysis. For non-linear feature assets, this fourth part of the identifier would be a reference number that is used internally by the department responsible for managing the asset. For example, a school would have a reference number that would be common to every asset associated with the school, e.g. the building, land, fence, communal toilet etc. This would enable all the assets associated with that school to be identified and grouped together by performing a database query that would link together every asset having that particular school’s reference number.

Table 2.5The list of category and feature class codes used for block 1 of the unique identifier

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Category** | **Code** | **Feature Class** | **Code** | **Feature Class** | **Code** |
| The Road Network | RN | Asphalt road | AS | Water meter | WM |
| The Urban Drainage Network | UD | Cobblestone road | CB | Hydrant | HY |
| The Street Lighting Network | SL | Gravel/ red ash road | GR | Customer connection | CC |
| The Water Supply Network | WS | Compacted earth road | CE | Communal standpipe | CS |
| Water Resources | WR | Footpath | FP | Public and communal toilet | PT |
| The Liquid Waste Network | LW | Paved area | PA | Bucket collection point | BP |
| Solid Waste Management | SW | Roundabout | RO | Landfill site | LS |
| Sanitation | SA | Bridge | BR | Weigh bridge | WB |
| Urban Greenery | UG | Culvert | CU | Solid waste container | SC |
| Parks and Play Areas | PA | Retaining wall | RW | River channel centre line | RC |
| River Systems | RS | Road furniture | RF | Tunnel | TU |
| Wetlands | WE | Drainage channel | DC | Lighting pole and mast | LP |
| Nature Reserves | NR | Pipe drainage | PD | Construction plant | CP |
| Abattoirs | AR | Retention and detention ponds | RP | Machinery | MA |
| Fire Service Assets | FF | Manhole | MH | Vehicle | VE |
| Municipal Markets | MM | Reservoir | RE | Building and facility | BU |
| MSE Facilities | MS | Water pipeline network | WN | Fence and boundary wall | FE |
| Schools | SC | Pump | PU | Administrative boundary | AB |
| Health Centers | HC | Valve | VA | External site boundary | EB |
| Youth Centers | YC | Access box | AC | Internal boundary | IB |
| Municipal Buildings | MB |  |  |  |  |

2.7.2The City’s coding system for the second block of the identifier

A table listing the codes used for the second block of the unique identifier.

**Table 2.6**Codes for block 2 – roads by surface finish (example)

|  |  |
| --- | --- |
| **Surface finish** | **Code for block 2** |
| Asphalt | RDAS |
| Cobblestone | RDCB |
| Gravel | RDGR |
| Compacted earth | RDCE |

## 

## The element Codewithin each feature class, provide a list of operational units that will be associated with each code is provided in the GIS project.

# Step-3. Inventory of the infrastructure assets

The inventory in Sawla city comprises five phases.

## 3.1Preparation for inventory

In this phase material, well trained man power and other resources be ready for the inventory. In addition to these data collection format and index map prepared for the inventory which contains element id of each asset is labelled in the map that is used to relate the spatial and non-spatial data of the asset.

## 3.2On-site survey

On-site survey depends on the index map and data collection format

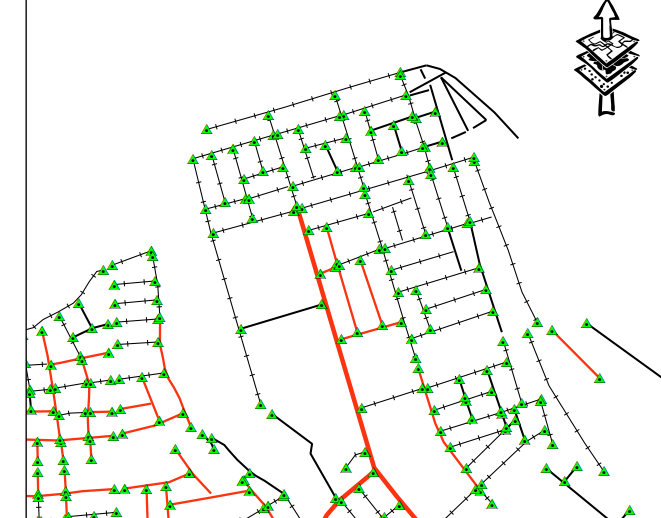


Figure 3.1Index map used in data collection

## 3.3Encoding and updating in to the GIS project.

Encoding and updating the data in to the GIS project is done according to the GIS manual.

## 3.4Verification on site

Verification on the site is very important phase that improves the quality of the data. So the verification is done by using the verification map for each asset which is prepared after encoding and updating the existing situation of the asset. it uses to check that if the encoded data is correct or not. here is the sample map used to verify road network asset by coding asphalt 1, cobble stone 2, gravel road 3 and earthen 4 label in the map. The verifier changes the numbers if incorrectly coded and tick if correct.

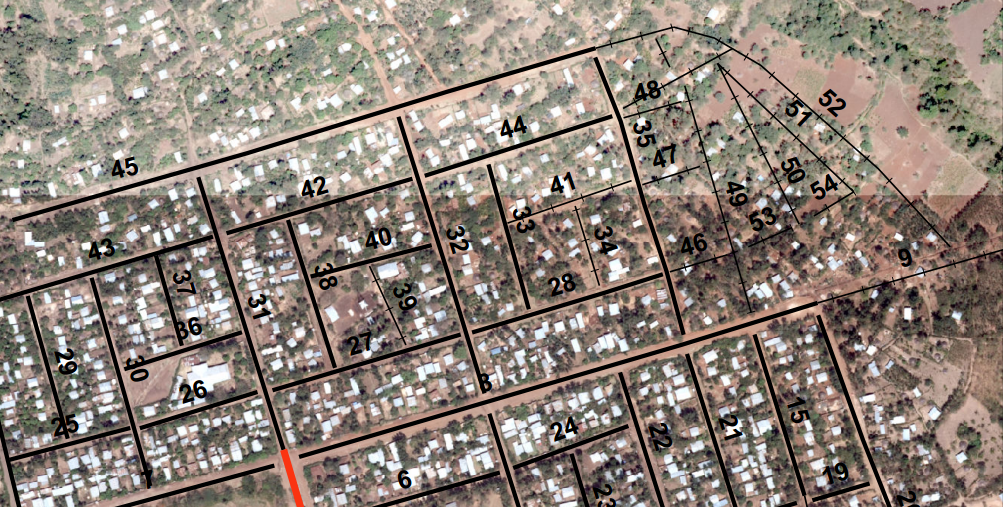


Figure 3.2 Map used for verification of road (source Sawla Town Ortho Photo. Taken on 2007 E. C)

## 3.5Rectification of some mistakes based on site verification.

Correction in the GIS project is done in this phase and the data is used as reliable data.

## 3.6The Movement Network

### 3.6.1Roads

The roads feature class has been sub-divided into four categories for reporting purposes, according to surface type. These four categories are: asphalt (code RNAS); cobblestone (code RNCB); gravel red ash (code RNGR); and compacted earth (RNCE). The on-site survey was carried out within each Kabele and the data was collected using recorded data sheet and as well as applying intensive actual measurement on the ground by city engineers, as well as through hiring and training surveying students as data collectors.

Table 3.1The unit of the city’s road network

|  |  |  |
| --- | --- | --- |
| Description | Unit | quantity |
| Area within the city boundary | km2 | 22.91 |
| Total length of road (all surface types) | Km | 60.533 |
| Equivalent (7m width) length of road | Km | 88.644 |
| Total area within the road reserve | km2 | 0.62 |
| Percentage of the city area occupied by the road reserve | % | 3 |

Table 3.2 Breakdown of roads by percentage

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Item** | **Surface Type** | **Length in meter** | **Length in Km** | **Length in km for 7m equivalent width** | **Area** | **%** |
| **1** | **Cobblestone Road** | **8,463.64** | **8.464** | **19.698** | **137,886.12** | **13.98** |
| **2** | **Compacted Earthen Road** | **16,113.00** | **16.113** | **20.155** | **141084** | **26.61** |
| **3** | **Gravel** | **33,728.89** | **33.729** | **45.610** | **319,267.73** | **55.72** |
| **4** | **Asphalt** | **2227** | **2.227** | **3.181** | **22270** | **3.68** |
|  | **Total** | **60,532.53** | **60.533** | **88.644** | **620,507.85** | **100%** |

**Figure 3.3 The city road by surface treatment**

### 3.6.2 Pedestrian walkway

Table 3.3 Breakdown of pedestrian walkways

|  |  |
| --- | --- |
| **Type of Pedestrian walk way** | **Total Pedestrian walk way in km** |
| Concrete | 9.136 |
| Total | 9.136 |

### 3.6.3Road structures

**Table 3.4 Roads structures**

|  |  |
| --- | --- |
| **Type** | **Total in NO** |
| **Bridge** | **3** |
| **Box Culvert** | **3** |
| **Pipe Culvert** | **12** |
| **Total** | **18** |

## 3.6.4Street lights

Table 3.5 Street lights

|  |  |  |
| --- | --- | --- |
| **Type** | **LED Lump** | **Total Street light in No** |
| No of pole | 87 | 87 |
| **Total** | **87** | **87** |

3.6.5 The Drainage Network

The city has masonry open drain and Reinforced concrete open drain that small portion is covered by ditch cover.

Table 3.6 Details of drains

|  |  |
| --- | --- |
| Type of drain | Total Drain in km |
| Masonry | 25.324 |
| Concrete | 4.498 |
| Total | 29.822 |

Table 3.7 Ditch cover

|  |  |
| --- | --- |
| Type | Total Ditch cover of different sizes from 3m to 15m in number |
| Ditch cover (culvert) | 860 |

3.7 Water supply

The water supply assets included in the inventory includes the water pumps, reservoirs, access boxes, water meters’ public stand pumps, the transition and distribution network of the city’s water supply system. But it is important to note that the inventory of transition and distribution network of the city is not finalized because of its lack of information or data, complexity and need of resource.

Table 3.8: Breakdown of the water supply network by feature class

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Water Supply | | | | | | | | |
| Item | Water supply sub-category | Type | Unit | Length(km) | Year of installation | Design period(year) | Service year | Remaining period |
| 1 | Transmission Network | CI,GI | Km | 23.4 | 1984 | 30 | 28 | 2 |
| 2 | Distribution Network | GI and HDPE | Km | 48.84 | 1984 | 30 | 28 | 2 |
| 3 | Public stand pipe (water point) | Concert | No | 51 | 1988 | 30 | 24 | 6 |
| 4 | Valve |  | No | 2546 | 1988 | 30 | 24 | 6 |
| 5 | Chlorination system |  | No | 2546 | 2008 | 25 | 4 | 21 |
| 6 | Bore hole | Deep well(100-260m) | No | 3 | 2000 | 30 | 12 | 18 |
| 7 | Pump(with different types) | Pump | No | 4 | 2000 | 30 | 12 | 18 |
| 8 | Water meter | Half inch | No | 4400 | 2000 | 30 | 12 | 18 |
| 9 | Reservoirs | Concrete | No | 6 | 1985 | 30 | 27 | 3 |
| 10 | Yard connection |  | No | 4400 | 2001 | 30 | 11 | 19 |
| 11 | Water Meters |  | No |  | 1984 | 30 | 24 | 6 |
| 12 | Spring box |  | No | 6 | 1984 | 25 | 28 | -3 |

3.8 Sanitation

Table 3.9 Details of sanitation facility

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Location** | **Number of Toilet** | **Number Of Room** |
| 1 | Guliti Market | 1 | 8 |
| 2 | Main Market | 2 | 8 |
| 3 | Bus station | 1 | 8 |
| **Total** | | | **24** |

3.10 Facilities for social and economic development

Table 3.10 Details of facilities for social and economic development

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ItemNo** | **Kind of facilities** | **Location** | **Unit** | **Quantity** | **Functionality** | **Remark** |
| 1 | Abattoir | KeraKebele | No | 1 | Functional (very poor condition) |  |
| 2 | Market | Mahalkebele(gulit) | No | 1 | Functional |  |
|  |  | MegenagnaKebele (keraGebeya | No | 1 | Well functional |  |
| 3 | Youth centre | MegenagnaKebele | No | 1 | Well functional |  |
| 4 | Primary School | In all kebeles | No | 8 | Well functional |  |
| 5 | Clinic | Yocha and bola sub city | No | 2 | Well functional |  |

# Step-4. Asses condition of all asset

## 4.1 Assessing the Condition of Asset Using Simple Indicators

**a) Condition Indicators**

Assessing the condition of infrastructure assets is critical to the wider success of the AMP, as it forms the foundation for building the estimate of both maintenance and rehabilitation. It also has an impact on the value of the asset base, since a large maintenance ‘deficit’ reduces the value of the assets. The way in which the condition of assets is defined will depend upon whether they are readily accessible or not. This is because the best way to provide an accurate assessment is through direct sensing, either visually or by automated sensors.

While there are various techniques and levels of assessment that can be used to determine the condition of asset, in the case of Sawla city the task team used a simpler assessment technique that links conditions to five-point scale based up on visual inspection. The following tables provide a description of the simple condition indicators defined in five point scales and a state of condition of the asset for all categories. The condition of the asset is inspected with visual assessment and the classification system further used to calculate the cost of maintenance, using a set of unit rates.

4.1.1 Assessment of Asset

Asset condition assessment is the evaluation or determination of the physical extent of damage, and the estimation of residual life. The condition results can be used for decision making and actions, say maintenance, repair, or replacement to preserve and provide the intended service. To be able to make condition assessment consistently across all categories and sub-categories of assets, the assessment method may require benchmarking (i.e. the development of quality/standards profiles against which the assets can be measured). The International Infrastructure Management Manual (IIMM) ([IPWEA, 2006](#_ENREF_6)), uses a 5-point-level ranking scale system. The same technique is also suggested in the works of the Australian Asset Management Collaborative Group ([AAMCoG, 2008](#_ENREF_1)); GTZ\_IS ([GTZ-IS, 2006b](#_ENREF_5)); and in the National Asset Condition Grading Standards Manual of Wellington’s New Zealand ([PRAMS, 2005](#_ENREF_10)).

Back to our country situation, in the past few years, there was no such a fully-fledged standard that can be used to assess the condition level of assets except few developed by GTZ for road and drainage. However, in June 2016, Ministry of Urban Development and Construction, Urban Governance & Capacity Building Bureau, developed asset condition level assessment standard manual. The manual is yet based on a 1-5 scale, where 1 stands for “very good” and 5 for “very poor” condition of assets. Still, the manual did not incorporate clear asset condition assessment indicators for buildings, street light, even water supply, and for many other assets. Hence, it is required to improve the 2014 AMP manual to make it comprehensive. The standard is divided into five indicator levels which are defined as very good; good (light deteriorated); fair (moderately deteriorated); and poor (severely deteriorated) and very poor (requiring rehabilitation). The indicator points are linked to whether the asset could be repaired using simple maintenance procedures; whether a major repair is required; or full rehabilitation is necessary. The subsequent Tables show the condition assessment indicators of assets.

Table 4.1: Condition indicator of all roads

|  |  |  |
| --- | --- | --- |
| **Level** | **Rating scale** | **Condition indicator** |
| 1 | Very Good | No defects such as cracking, corrugations, potholes, wash away, channeling and minor defects, Shape of road as still in original design condition |
| 2 | Good | Good driving quality, no rutting, wash away and only insignificant defects. No significant depressions, undulations and deformation |
| 3 | Fair | No failures and only very limited cracking or potholes. Shape of the road deteriorating, but road still sheds water |
| 4 | Poor | Significant cracking, rutting and potholing. Water retained on road due to rutting, severe potholing, channeling and other deformation |
| 5 | Very Poor | Disintegrated surface. Total collapse of the road structure and barely passable. Total collapse of the road structure and barely passable |

Source: Adapted from Revised Asset Management Plan of 2016

Table4.2: Condition indicator of bridges, culverts and overpasses

|  |  |  |
| --- | --- | --- |
| **Level** | **Rating scale** | **Condition indicator** |
| 1 | Very Good | No defects; as new |
| 2 | Good | Structurally sound and no serious cracking or scour requiring attention |
| 3 | Fair | Minor maintenance required |
| 4 | Poor | Scour, erosion of abutments and piers or structural defects; some rehabilitation work required |
| 5 | Very Poor | Serious structural damage that is a safety hazard |

Source: Adapted from Revised Asset management Plan of 2016

Table4.3: Condition Indicators for Sub-Categories Water Supply

|  |  |  |
| --- | --- | --- |
| **Level** | **Descriptor** | **General Description** |
| 1 | very good | used for new assets for the first year |
| 2 | good | only routine and periodic maintenance procedures required |
| 3 | Fair | noticeable deterioration, but relatively simple maintenance |
| 4 | poor | serious deterioration, or damage, requiring more complex maintenance |
| 5 | very poor | decommissioning, or replacement, of the asset |

| **Water Supply Sub-Category** | **Year of installation** | **Design period(year)** | **Service year** | **Remaining period** |
| --- | --- | --- | --- | --- |
| Transmission network breaks | 1984 | 30 | 28 | 2  2  22  22 |
| Distribution network breaks | 1984 | 30 | 28 | 2  26 |
| Public Standpipe | 1988 | 30 | 24 | 6 |
| Valves | 1988 | 30 | 24 | 6 |
| Chlorination system | 2008 | 25 | 4 | 21 |
| Boreholes | 2000 | 30 | 12 | 18 |
| Pumps (with sub-types) | 2000 | 30 | 12 | 18 |
| Reservoirs | 1985 | 30 | 27 | 3 |
| Yard connections | 2001 | 30 | 11 | 19 |
| Water Meters | 1984 | 30 | 24 | 6 |
| Spring box | 1984 | 25 | 28 | -3 |

Table 4.4: Condition indicators of drainage channels and pipes

|  |  |  |
| --- | --- | --- |
| **Level** | **Rating scale** | **Condition indicator** |
| 1 | Very Good | Shape of drain still in original design condition |
| 2 | Good | Drainage functions easily fulfilled |
| 3 | Fair | Drainage effective but slightly impaired |
| 4 | Poor | Design function impeded due to siltation, vegetation or scour |
| 5 | Very Poor | Drainage non functional |

Source: Adapted from Asset management Plan Manual

## 4.2 Condition assessment of movement network systems

The status of all Movement Network activity areas (Road, Walkway, Road structure and street light) conditions for different surfaces and other elements of this sub-category are assessed and described based on a five point grades or scales.

## 4.3Assessment of Assets

The condition assessment has been carried out for all feature classes of assets. The type of analysis used to determine the condition has been carried out in one of two ways. The first of these uses the condition level directly. This approach has been used where there is a direct correlation between the condition level and the deterioration of the asset. The second way assesses the type of deterioration directly, and records this. This second approach is used for some of the linear assets, where the deterioration can vary along the length of an element, and also for buildings. With these assets the areas of deterioration have been identified and defined spatially (i.e. with their start and end points), using dynamic segmentation.

The deterioration indicator level of every feature class of assets, based upon a 5-level scale, is shown in the annex. The tables shown below deal primarily with the above ground linear assets, where the deteriorated areas need to be clearly identifies in order to build an effective maintenance planning program in step 8. In addition, other feature classes of assets, which have a condition level where more than 50% of assets are in poor or very poor condition, are also highlighted. Finally, the linear assets where the condition level is very poor are shown separately.”

Table 4.5The extent of road deterioration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type of road(by road surface type)** | **Deterioration Area( m2)** | **Length in m for 7m equivalent width** | **Length in km for 7m equivalent width** | **Percentage Deteriorated** |
|
| Cobble stone Road | 25608 | 3658.28 | 3.658 | 16% |
| Earth Road | 97200 | 13885.71 | 13.886 | 61% |
| Gravel | 35,955 | 41,074.92 | 41.075 | 23% |
| Asphalt | 0 | 2,541.55 | 2.54 | 0% |
| **Total** | 158,763.00 | **67,103.12** | **67.103** | 100% |

4.3.1An assessment summary table for road

Table 4.6 Road condition assessment

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type of road** | **Length** | **Length Equivalent 7km width** | **Condition** | | | | |
| **(by road surface type)** | **(km)** |  | **Very Good** | **Good** | **Fair** | **Poor** | **Very poor** |
| Asphalt |  |  | - | 2.227 | - | - | - |
| 2.227 | 3.181 |
| Coble Stone | 8.464 | 19.698 | 1.65 | 3.994 | 1.38 | 1.03 | 0.404 |
| Gravel | 33.729 | 45.610 | 2.34 | 7.88 | 1.53 | 21.70 | 0.28 |
| Earthen | 16.113 | 20.155 | - | 0.44 | - | 9.082 | 6.59 |
| **Total** | **60.533** | **88.634** | **3.99** | **14.541** | **2.91** | **31.812** | **7.274** |
| Percentage |  |  | **6.59%** | **24.02%** | **4.81%** | **52.55%** | **12%** |

Figure 4. 1 Pie chart used to elaborate the condition of road surface

**4.3.2 An assessment summary table for road structures**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Structure** | **No** | **Condition** | | | | |
| **Very Good**  **(No)** | **Good**  **(No)** | **Fair**  **(No)** | **Poor**  **(No)** | **Very poor**  **(No)** |
| Bridge | 3 | 1 | 2 | 0 | 0 | 0 |
| Box Culverts | 3 | 0 | 3 | 0 | 0 | 0 |
| Pipe Culvert | 12 | 0 | 10 | 2 | 0 | 0 |
| **Total** | 18 | 1 | 15 | 2 | 0 | 0 |

Table 4.7 Condition of major road structures

## 4.3.3 Pedestrian walkway

An assessment summary table for pedestrian walkways

Table 4.8 Condition of walkway

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Type of Pedestrian walk way** | **Total length**  **(km)** | **Condition** | | | | |
| **Very good**  **(km)** | **Good**  **(km)** | **Fair**  **(km)** | **Poor**  **(km)** | **Very poor**  **(km)** |
| Concrete | 9.136 | 6.4 | 2.736 | 0 | 0 | 0 |
| **Total** | 9.136 | 6.4 | 2.736 | **0** | **0** | **0** |

4.3.4Condition of street light

Table 4.9 Condition of street light

|  |  |  |  |
| --- | --- | --- | --- |
| **Sub Category** | **Unit** | **Quantity** | **Condition Analysis** |
| **LED Lump** | **No** | **87** | Very Good |

## 4.3.5 Drainage

## An assessment summary table for drainage

Table 4.10 Surface drainage condition assessment

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Type of Drainage** | **Total length** | **Condition** | | | | |
| **(km)** | **Very Good** | **Good** | **Fair** | **Poor** | **Very poor** |
|  | **(km)** | **(km)** | **(km)** | **(km)** | **(km)** |
| Drainage | 29.822 | 11.746 | 13.72 | 2.8 | 1.556 | 0 |
| **Total** | **29.822** | **11.746** | **13.72** | **2.8** | **1.556** | 0 |

Figure 4.2 Pie chart illustrating the drainage condition

4.4Water Supply

The condition of the water supply system is described by dividing in to two ways. The first one is describing items in terms of length with the assessed condition and the second one is defining the condition in terms of their design life. The following table shows the condition assessment measuring bench mark for the first division.

Table 4.11 Condition of water supply list of Sawla City water supply and sewerage service asset data.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Water Supply Sub-category** | **Type** | **Unit** | **Length** | **Condition** | | | | |
| **Very good** | **Good** | **Fair** | **Poor** | **Very Poor** |
| **1** | **Transmission Network** | **CI,GI** | **Km** | **23.4** | **-** | **20** | **0.4** | **1** | **2** |
| **2** | **Distribution network** | **GI and HDPE** | **Km** | **48.84** | **-** | **40** | **2.84** | **2** | **4** |
| **3** | **Water point/public stand pipe** | **Concrete** | **No** | **51** | **-** | **-** | **11** | **30** | **10** |
| **4** | **Valve** |  | **No** | **2546** | **-** | **-** | **1280** | **546** | **720** |
| **5** | **Bore hole** | **Deepwell**  **/100-260/** | **No** | **3** | **-** | **-** | **2** | **1** | **-** |
| **6** | **Pump/with different type** |  | **No** | **4** | **-** | **-** | **4** | **-** | **-** |
| **7** | **Water meter** | **Half inch** | **No** | **4400** | **-** | **-** | **2180** | **410** | **1810** |
| **8** | **Reservoir** | **Concrete** | **No** | **6** | **-** | **-** | **-** | **6** | **-** |
| **9** | **Spring box** |  | **No** | **7** | **-** | **-** | **7** | **-** | **-** |
| **10** | **Collection chamber /access box/** | **Concrete** | **No** | **3** | **-** | **-** | **3** | **-** | **-** |

4.4.1Sanitation

An assessment summary table for sanitation

Table 4.12 Condition of sanitation related assets

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Asset** | **Total number** | **Condition** | | | | |
| **Very Good**  **(No)** | **Good**  **(No)** | **Moderate**  **(No)** | **Poor**  **(No)** | **Very poor**  **(No)** |
| Public toilets | 4 | 1 | 3 | 0 | 0 | 0 |

4.5Social and economic development facilities

An assessment summary table for social and economic development facilities

Table 4.13 Condition summary for buildings and facilities (Social and Economic Development)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Asset** | **Total number** | **Condition** | | | | |
| **Very Good**  **(No)** | **Good**  **(No)** | **Moderate**  **(No)** | **Poor**  **(No)** | **Very poor**  **(No)** |
| Abattoir | 1 | 0 | 0 | 0 | 0 | 1 |
| Market | 2 | 0 | 0 | 2 | 0 | 0 |
| Health clinics | 2 | 1 | 1 | 0 | 0 | 0 |
| Primary schools | 8 | 0 | 5 | 3 | 0 | 0 |
| Youth centres | 1 | 0 |  | 1 | 0 | 0 |
| **Total in no.** | **14 buildings in no.** | **1** | **6** | **6** |  | **1** |

# Step-5. Develop a Maintenance Budget Guide for each Asset

**5.1 Introduction**

The maintenance activity provided for each asset categories are different since the type of the problems that seek the maintenance differs. The maintenance activities that are described under this portion mainly focus on the maintaining procedure for the observed problems of the condition assessment. Similarly, the maintenance rates are also derived for the specific type of maintenance activities. The maintenance rates are developed based on the measuring unit of the quantity which is supposed to be maintained. Therefore, the rates are given per linear, areal, and volumetric or pieces measuring units.

## 5.2 Routine and periodic maintenance activities

5.2.1 Roads

Table 5.1 Maintenancedeficits for road

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item** | **Unit of Measure** |  | **Unit** | **Cost (EB)** |
| **Rate (EB)** |
| Cobble stone roads fairly damaged | m2 | 64,419.00 | 280 | 18,037,320.00 |
| Cobble stone roads poor condition | m2 | 11,027.00 | 320 | 3,528,640.00 |
| **Total Maintenance Deficit For Cobble** |  | **75,446** |  | **21,565,960.00** |
| Gravel Roads fairly damaged | m2 | 12,248.29 | 50 | 612,414.40 |
| Gravel Roads poor condition | m2 | 199,372.54 | 60 | 11,962,352.64 |
| **Total Maintenance Deficit For Gravel** |  | **211,620.83** |  | **12,574,767.04** |
| Earthen Roads poor condition | m2 | 78,123.00 | 18 | 1,406,214.00 |
| **Total Maintenance Deficit For Earthen** |  | 78,123.00 |  | **1,406,214.00** |
| **Total** |  | **365,189.83** |  | 35,546,941.04 |

5.2.2 Road structures

Table 5.2 Maintenance deficits for road structure

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item** | **Unit of Measure** | **Quantity** | **Unit**  **Rate (EB)** | **Cost (EB)** |
| Bridge & Culvert | M2 | 100 | 6500 | 650,000.00 |
| **Total** |  | **100** | 6500 | 650,000.00 |

5.3 Water supply

Table 5.3 The maintenance deficit for water supply

| Water Supply | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| Item | Water supply sub-category | Type | Unit | Length(km) | Unit rate(ETB) | Maintainace cost |
| 1 | Transmission Network | CI,GI | Km | 1.4 | 1,200,000 | 1,680,000 |
| 2 | Distribution Net work | GI and HDPE | Km | 4.84 | 146,520 | 709,156.80 |
| 3 | Water point/ Public stand pipe | Concrete | No | 31 | 41,000 | 1,271,000 |
| 4 | Valve |  | No | 1826 | 1,200 | 2,191,200 |
| 5 | Water meter | Half inch | No | 2590 | 450 | 1,165,500 |
| 6 | Reservoirs | Concrete | No | 4 | 1,200,000 | 4,800,000 |
| 7 | Spring box |  | No | 7 | 125,000 | 875,000 |
| 8 | Collection chamber/Access box/ |  | No | 3 | 2000 | 6,000 |
| **Total maintenance cost for water asset** | | | | | | 12,697,856.80 |

The total maintenance deficit of water supply is **12,697,856.80 ETB.**

### 5.3.1Drainage

### Condition analysis for drainage

### Table 5.4 Maintenance deficit for drainage

|  |  |  |
| --- | --- | --- |
| **Condition** | **Masonary length(Km)** | **Concrete length(Km)** |
| **V.Good** | **5.9058** | **4.498** |
| **Good** | **13.72** | **0** |
| **Fairly** | **2.8** | **0** |
| **Poor** | **1.556** | **0** |
| **V.Poor** | **0** | **0** |
| **Total** | **23.98** | **4.498** |

Table 5.5 Maintenance deficit for drainage

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item** | **Unit of Measure** | **Quantity** | **Unit rate** | **Cost (EB)** |
| Masonry ditch Fair damaged | km | 2.8 | 950,000 | 2,660,000 |
| Masonry ditch badly damaged(poor) | km | 1.556 | 1,100,000 | 1,711,600 |
| pipe culvert | No | 2 | 186300 | 372,600.00 |
| Precast ditch cover | No | 110 | 3250 | 313,700.00 |
| Concrete pipe badly damagedPoor | km | 0 | 0 | 0.00 |
| **Total** | km | 4.356 |  | 5,057,900 |

## 5.4 Cost summary breakdown by activity area and asset category

Table 5.6 The maintenance deficit by strategic activity area

|  |  |  |
| --- | --- | --- |
| **Strategic activity area** | **Item** | **Cost (EB)** |
| Movement network | Roads | 35,546,941.04 |
| Water supply | Water supply | 12,697,856.80 |
| Environmental services | Drainage | 4,371,600 |
| Social and Economic | Market and others | 2,720,000 |
| Building maintenance | office building | 1,900,000 |
| Total Maintenance Deficit: |  | **58,280,581.04** |

# Step-6. Calculate the current replacement cost and residual value of all assets

## Introduction

The chapter describes how to calculate the value of the municipal infrastructure asset base for those assets that are included in the Asset Management Plan. There are two ways of looking at the value of assets, both of which are important for the City Administration. The first is to look at the existing value of the assets. This is achieved by taking the original cost of construction of the asset; and then depreciating that cost to the present time. While that approach is the one used in conventional accounting practice, it has two shortcomings when applied to the depreciation of a number of physical assets, of which the second is particularly associated with network infrastructure. Firstly, it does not take into account any increase in the value of the asset that may have occurred since the asset was constructed, which can be caused by external factors, such as inflation or appreciation, for example. As a result, it can seriously undervalue assets. Secondly, it does not take into account accelerated depreciation caused by external factors such as excessive wear and tear on roads, or storm water damage, which is a specific feature of many network infrastructure services.

The second approach, which is the one most widely used in international practice when valuing fixed assets such as network infrastructure, where there is a long-term investment that cannot easily be traded on the open market, is to use what is known as Depreciated Replacement Cost (DRC). This approach uses the current replacement cost of the asset as the basis for its valuation. However, it then takes into account the age of the asset and depreciates it on the basis of how long it has been operational and how much operational life remains. The way in which this done is described in detail in section 6.4.

While there are a number of components involved with this calculation of DRC, it is the calculation of the current replacement cost of the asset that presents the greatest challenge, since this is the one variable that is dependent on externalities. The challenge is therefore to ensure the greatest

**Replacement Cost**

Replacement cost defines what they would cost if they were to be replaced by new assets at current prices. This is assumed using the local knowledge supplemented by engineering judgment. The information is based upon unit rates, which were gathered from arrange of projects around the country. It represents a first estimates, which can be refined over time.

**Residual Value of Assets**

The second aspect of Costing relates to the residual/current value of the Assets. Once the infrastructure inventory has been completed, each road and drain has a given value. The ideal way of deriving a current value for a road would be to develop a deterioration curve that linked the extent of deterioration to the residual life of the assets. Such process would, however require more information than is currently available. The alternative, used here, was to use a qualitative assessment based upon an expectation of how long the road might continue to provide a passable surface.

## 6.1.1Building a list of Rates for New Asset Provision

Table 6.1 A list of Rates for New Asset ProvisionCosting, and Valuing, the Asset Base

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Sub-Category | Unit of Measure | Rate | Sub-Category | Unit of Measure | | | Rate |
| Roads: | | | Sanitation: | | | | |
| Asphalt Road | m2 | 6,200 | Public Latrines | | Each | 800,000 | |
| Gravel Road | m2 | 65 | Suction Tanker | | Each | 1,600,000 | |
|  | m2 | \_ | Treatment Site | | Each | 22,000,000 | |
| Earth Road | m2 | 30 | Communal latrine | | Each | 150,000 | |
| Pedestrian Walkway | m2 | 1000 | Transmission Network | | Km | 1,200,000.00 | |
| Cobble Stone | m2 | 320 | Distribution Network | | Km | 146,520.000 | |
| Box, Pipe Culvert | No | 186,300.00 | Water Meters | | No. | 450 | |
| Street signs | No | - | Valves | | No. | 1,200.00 | |
| Retaining Wall | m3 | 1200 | Boreholes | | No. | 1,500,000.00 | |
| Bridge | M2 | 6500 | Pumps | | No. | 750,000.00 | |
|  |  |  | Reservoir | | No. | 1,200,000.00 | |
|  |  |  | Spring box | | No. | 125,000.00 | |
|  |  |  | Yard Connection | | No. | 4400 | |
|  |  |  | Water point/public stand pipe | | No. | 41,000.00 | |
| Drains: |  |  | Chlorination system | |  | 80,000.00 | |
| Masonry drains | m3 | 720.03 |  | | | | |

### 6.1.2 Introduction

The cost and value of existing assets have been set out in tabular form; and cover every asset detailed by feature class. The full list is provided in the annex. This section provides a summary of the asset cost and value, listed according to:

1. The major development activity areas
2. The cost and value of the movement network
3. The cost and value of the water supply network
4. The cost and value of the environmental services infrastructure
5. The cost and value of the social and economic services infrastructure
6. The cost and value of the municipal office”

### 6.1.3 The replacement cost and residual value of assets by strategic activity area

Since the table is too large, see the whole replacement cost and residual value of assets which is provided in the annex part

A table of replacement cost and residual value by strategic activity are

Table 6.2 The replacement cost and residual value of assets by strategic and supportive activity

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Item | Asset | Replacement cost | Residual asset Value | Asset deficit | Maintenance cost |
| 1 | Movement Network | 145,785,127.680 | 85,385,693.760 | 39,873,654.925 | 36,569,541.040 |
| 2 | Water Supply | 76,345,481.20 | -7,120,281.99 | 31,923,401.10 | 12,405,740.00 |
| 3 | Environmental | 30,032,000.00 | 27,474,700.00 | 1,336,300.0 | 1,336,300.0 |
| 4 | Social and Economic | 4,990,000.00 | 1,536,000.00 | 2,720,000.00 | 2,720,000.00 |
| 5 | Governmental Building | 19,000,000.00 | 4,560,000.00 | 14,440,000.00 | 1,900,000.00 |
|  | **Total** | **296,142,988.88** | **119,880,415.77** | **79,202,356.02** | **58,280,581.04** |
|

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Road Sub category | Replacement cost | Residual Value of Assets | Asset deficit | Maintenance Deficit |
| Asphalt | 44,540,000.00 | 37,859,000.00 | 0.00 | - |
| Gravel | 25,541,418.24 | 2,020,329.10 | 12,767,370.92 | 12,574,767.04 |
| Earthen road | 4,232,520.00 | 4,626.00 | 3,009,924.00 | 1,406,214.00 |
| Walkway(Concrete) | 4,750,720.00 | 4,275,648.00 | 0.00 | - |
| Cobblestone | 43,020,469.44 | 19,733,690.66 | 23,073,760.00 | 21,565,960.00 |
| Open masonry | 38,470,380.00 | 26,404,704.00 | 4,371,600.00 | 4,371,600.00 |
| Bridge | 10,200,000.00 | 9,040,000.00 | 650,000.00 | 650,000.00 |
| Culvert | 13,500,000.00 | 12,452,400.00 | 372,600.00 | 372,600.00 |
| Street Lighting | 5,220,000.00 | 3,132,000.00 | 0.00 | - |
| Market | 700,000.00 | 316,000.00 | 370,000.00 | 370,000.00 |
| Abattoir | 3,600,000.00 | 880,000.00 | 2,000,000.00 | 2,000,000.00 |
| Disposal site | 180,000.00 | 144,000.00 | 0.00 | - |
| Public toilet | 1,680,000.00 | 1,680,000.00 | 0.00 | - |
| Youth centres | 690,000.00 | 340,000.00 | 350,000.00 | 350,000.00 |
| Precast(Ditch cover) | 4,472,000.00 | 4,158,300.00 | 313,700.00 | 313,700.00 |
| Water Supply transmission network | 28,080,000.00 | 352,000.00 | 4,120,000.00 | 1,520,000.00 |
| Water SupplyDistrbution network | 7,156,036.80 | -99,970.88 | 1,177,040.00 | 577,040.00 |
| water supply total in No. | 41,109,444.40 | -7,372,311.11 | 26,626,361.10 | 10,308,700.00 |
| Total | **277,142,988.88** | **115,320,415.77** | **79,202,356.02** | **58,280,581.04** |

### 

# Step-7. Cost, and Priorities, New Works Projects within the CIP Process

## Introduction

CIP projects can be divided into three types: (i) work that upgrades existing services, or provides additional services in existing areas; (ii) work that extends the infrastructure service network to new areas; and (iii) the construction of specific individual (high value) assets that generally serve both new and existing areas. In all the three cases: (i) the new assets need to be situated within a strategic plan; (ii) the role of the assets need to be measured against strategic needs and objectives; and (iii) the choice of assets need to incorporate their long-term operational and maintenance cost. If this is not done, there is a danger that the capital investment plan will simply become a ***“wish list”*** of needs that are either inappropriate or cannot be sustained. Such a review (of assets against strategic goals and objectives) should be undertaken annually across all infrastructure services with public perception. This is one reason why a rolling three-year investment planning process is actually more effective.. A rolling program is much easier to integrate with an Asset Management Plan and provides greater inter-operability between the two, thereby ensuring better strategic planning and more effective management.

## The total budgetary requirement for infrastructure rehabilitation

Rehabilitation projects are included in the new projects during the planning. There is no a separate table for rehabilitation.

## Prioritize the new works projects by strategic activity area

The third activity is that of prioritising the new works projects. This activity will be carried out with the AMP focal person working as a member of the CIP team. Details the variables that should be taken into account in prioritising projects. It is important to stress that this activity is an integral part of the CIP process. The purpose of section is to highlight a prioritisation process that draws upon the specific skills and expertise of the AMP team, thereby enabling them to contribute effectively in this critical important aspect of CIP process that will lead to a final list of new works projects going forward to the Executive for approval.

Table 0.1: Summary of the 3-year rolling program by strategic and supporting activity areas

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Strategic Area | EFY 2013 | EFY 2014 | EFY 2015 | Total |
| A | Movement Network | 27,833,024.28 | 32,869,855.65 | 36,156,841.22 | 36,156,841.22 |
| B | Water Supply Network | - | - | - | - |
| C | Economic & Social Services | 2,572,048.41 | 3,086,458.09 | 3,395,103.90 | 9,053,610.39 |
| D | Environmental Services | 11,169,643.63 | 13,403,572.36 | 14,743,929.60 | 39,317,145.59 |
| E | Other(Capacity building) | 2,148,838.70 | 2,363,722.57 | 2,600,094.83 | 7,112,656.10 |
| F | Municipal Administration Buildings and Other Projects which cannot be put in Pillars | 8,364,063.20 | 9,945,126.87 | 10,939,639.55 | 29,248,829.62 |
|  | **Total** | **52,087,618.22** | **61,668,735.54** | **67,835,609.09** | **120,889,082.92** |

Table 9.2 The three year maintenance plan

| S/N | Infrastructure Sub-Category | Total Cost for 3 years | Maintenance Budget for EFY 2013 | Maintenance Budget for EFY 2014 | Maintenance Budget for EFY 2015 |
| --- | --- | --- | --- | --- | --- |
| **A** | **Movement Network** |  |  |  |  |
| 1 | Roads |  |  |  |  |
| 1.1 | Asphalt Roads | - | - | - | - |
| 1.2 | Cobble Stone road | 7,956,806.00 | 612,062.00 | 1,836,186.00 | 5,508,558.00 |
| 1.3 | Gravel road maintenance | 22,620,000.00 | 1,740,000.00 | 5,220,000.00 | 15,660,000.00 |
|  | **Movement Network Total** | **30,576,806.00** | **2,352,062.00** | **7,056,186.00** | **21,168,558.00** |
| **B** | **Water supply** |  |  |  |  |
|  | Water supply maintenance | 4,160,000.00 | 320,000.00 | 960,000.00 | 2,880,000.00 |
|  | **Water supply total** | **4,160,000.00** | **320,000.00** | **960,000.00** | **2,880,000.00** |
| **C** | **Environmental Services** |  |  |  |  |
| 1.3 | Drainage maintenance | 8,607,300.00 | 662,100.00 | 1,986,300.00 | 5,958,900.00 |
|  | **Environmental Services total** | **8,607,300.00** | **662,100.00** | **1,986,300.00** | **5,958,900.00** |
| **E** | **Economic and Social service** |  |  |  |  |
| 1 | Electric line | 2,482,333.42 | 236,501.00 | 624,362.64 | 1,621,469.78 |
| 2 | MSE Shed maintenance | 2,482,803.78 | 210,420.10 | 631,260.30 | 1,641,123.38 |
|  | **Economic and Social service total** | **4,965,137.20** | **446,921.10** | **1,255,622.94** | **3,262,593.16** |
|  | **Municipal maintenance total** | **48,309,243.20** | **3,781,083.10** | **11,258,108.94** | **33,270,051.16** |
|  | **Administration buildings** |  |  |  |  |
| 1 | Millennium Hall maintenance | 9,971,338.30 | 1,424,476.90 | 2,848,953.80 | 5,697,907.60 |
|  | **Buildings total** | **9,971,338.30** | **1,424,476.90** | **2,848,953.80** | **5,697,907.60** |
|  | **Total maintenance budget** | **58,280,581.50** | **5,205,560.00** | **14,107,062.74** | **38,967,958.76** |

## Allocate the budget to projects on the basis of priorities

**Activity:** Working with the CIP team, allocate a budget to each of the strategic activity area, including the rehabilitation projects. Remove from the database for new works projects any projects were rejected for the current year and archive

Table 9. 3 Projects with approved Budgets for 2012 EC

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Pillar 6. Integrated Urban Infrastructure** | | | |  |  |
| **No** | **Projeects** | Number of Projects | Unit | Qty | Amount |
| A | [Movement Network[1]](file:///E:\UIIDP\Sawla%20town\2013%20E.C\CIP,%20AMP%20and%20REP-2013\AMP-2013\AMP%20New%20Projects.xlsx#RANGE!_ftn1) |  |  |  |  |
| 1 | Roads |  |  |  |  |
| 1.1 | Cobblestone Road | 7 | m2 | 16,540.00 | 18,050,512.64 |
| 1.3 | Gravel Road | 2 | m | 738.00 | 4,405,110.40 |
| 4.2 | Bridge(Rolled) | 1 |  | 1.00 | 746,781.02 |
| 5 | Street lighting | 1 | km | 2.56 | 4,630,620.21 |
|  | **Sub-total Movement Network** |  |  |  | **27,833,024.28** |
| B | Water Supply Network |  |  |  |  |
|  | **Sub-total Water Supply Network** |  | m | **-** | **-** |
| C | **Economic & Social Services** |  |  |  |  |
| 3.2 | MSE Shade | 1 | No | 1.00 | 658,586.42 |
|  | **Sub-total Economic & Social Services** |  |  |  | **658,586.42** |
|  | Other |  |  |  |  |
| 1 | Electricity reticulation | 2 |  | 900.00 | 1,913,461.99 |
|  | **Sub-total Other** |  |  |  | **1,913,461.99** |
| **Total Pillar 6. Integrated Urban Infrastructure** | | | |  | **30,405,072.68** |
| **Pillar 7: Environmental, Green Services & Recreation** | | | | |  |
| D | Environmental Services |  |  |  |  |
| 1 | Drainage |  |  |  |  |
| 1.1 | Name of drainage project(New) | 7 | m | 1,132.00 | 6,338,216.76 |
| 5.1 | Asphalt median | 3 | m2 | 3,440.00 | 1,264,929.42 |
| 5.2 | Median fence | 2 | ml | 3,750.00 | 3,566,497.46 |
|  | **Subtotal Environmental Services** |  |  |  | **11,169,643.63** |
| E | Other |  |  |  |  |
| **Total Pillar 7: Environmental, Green Services & Recreation** | | | | | **11,169,643.63** |
| **Total Pillar 8: Resilient, Inclusive and Safer Cities** | | | | |  |
| C | Economic & Social Services |  |  |  |  |
|  | **Subtotal Economic & Social Services** |  |  | **-** | **-** |
| D | Environmental Services |  |  |  |  |
|  | **Subtotal Environmental Services** |  |  | **-** | **-** |
| E | Other |  |  |  |  |
| **Total Pillar 8: Resilient, Inclusive and Safer Cities total** | | | | | **-** |
| Municipal Administration Buildings and Other Projects which cannot be put in Pillars | |  |  |  |  |
| 1 | Buildings(Rolled) | 1 | No | 1 | 8,364,063.20 |
|  | **Subtotal Other** |  |  | **1** | **8,364,063.20** |
| Consultancy Services for designs and contract management/supervision | |  |  |  |  |
| **Total Consultancy Services for designs and contract management/supervision** | |  |  | **-** | **-** |
|  |  |  |  |  |  |
|  | **Total CIP** |  |  |  | **49,938,779.52** |
|  |  |  |  |  |  |
| **Total Capacity Building Plan** | | | |  | **2,148,838.70** |
|  |  |  |  |  |  |
| **Grand Total Expenditure (CIP + CBP)** | | | |  | **52,087,618.22** |

**9.5 Generate the final budget for new works projects**

The approved new works and rehabilitation projects, grouped by strategic activity area are given in the following tables.

Table 9.1 The budget for approved new works projects by activity

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Strategic Area | EFY 2013 | EFY 2014 | EFY 2015 | Total |
| A | Movement Network | 27,833,024.28 | 32,869,855.65 | 36,156,841.22 | 36,156,841.22 |
| B | Water Supply Network | - | - | - | - |
| C | Economic & Social Services | 2,572,048.41 | 3,086,458.09 | 3,395,103.90 | 9,053,610.39 |
| D | Environmental Services | 11,169,643.63 | 13,403,572.36 | 14,743,929.60 | 39,317,145.59 |
| E | Other(Capacity building) | 2,148,838.70 | 2,363,722.57 | 2,600,094.83 | 7,112,656.10 |
| F | Municipal Administration Buildings and Other Projects which cannot be put in Pillars | 8,364,063.20 | 9,945,126.87 | 10,939,639.55 | 29,248,829.62 |
|  | **Total** | **52,087,618.22** | **61,668,735.54** | **67,835,609.09** | **120,889,082.92** |

# Step-8. Build the Maintenance Plan

## The maintenance budget for routine and periodic maintenance activities

A table of all of all normal maintenance activities, for each feature class of asset, together with a budget for maintenance.

A summary table detailing the total maintenance budget by activity areas

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S/N | Infrastructure Sub-Category | Unit | Quantity | Unit Rate | 2012 EFY |
| **A** | **Movement Network** |  |  |  |  |
| 1 | Roads |  |  |  |  |
| 1.1 | Asphalt Roads |  |  |  | - |
| 1.2 | Cobble Stone road maintenance | m2 | 120 | 5,100.52 | 612,062.00 |
| 1.3 | Gravel road maintenece | m | 500 | 3,480.00 | 1,740,000.00 |
|  | **Movement Network Total** |  |  |  | **2,352,062.00** |
| **B** | **Water supply Network** |  |  |  |  |
|  | Water line maintenance | m | 500 | 640.00 | 320,000.00 |
|  | **Water supply total** |  | **500.00** | **640.00** | **320,000.00** |
| **C** | **Environmental Services** |  |  |  |  |
| 1.3 | Drainage maintenance | m | 30 | 22,070.00 | 662,100.00 |
|  | **Environmental Services total** |  |  |  | **662,100.00** |
| **D** | **Economic and Social service** |  |  |  |  |
| 1 | Electric line maintenance | m | 650 | 363.85 | 236,501.00 |
| 2 | MSE Shed maintenance | No | 5 | 42,084.02 | 210,420.10 |
|  | **Economic and Social service total** |  |  |  | **446,921.10** |
|  | **Municipal Maintenance Total** |  |  |  | **3,781,083.10** |
| **E** | **Administrative buildings** |  |  |  |  |
|  | Millennium hall maintenance |  | 1 | 1,424,476.90 | 1,424,476.90 |
|  | **Administrative buildings total** |  |  |  | **1,424,476.90** |
|  | **Total maintenance budget** |  |  |  | **5,205,560.00** |

Table 10.1 A table of maintenance budget costs by activity area

## Prioritizing the budget for maintenance deficit reduction

A description of the process followed to determine the priority list of maintenance activities for each activity area

Description of the process followed to determine the priority list

In looking at priorities for new works projects step 7 highlighted a number of factors that should be taken into account when prioritising assets. A similar process is required for prioritising maintenance activities. For maintenance, this prioritisation process should be based upon three criteria:

1. Creating an equitable balance between different strategic activity areas.

Here the list of strategic areas, i.e. the movement network, environmental services; and the social and economic services, provides a good basis for evaluation. Note that the maintenance of water supply assets (the fourth major activity area) operates within its own budgetary framework and as a result is excluded from this process, although the next bullet points on internal prioritisation are equally relevant to that activity area.

1. Create an equitable balance within each strategic activity area.

This is particularly relevant to the road movement network where there is often a strong imbalance in favour of asphalt road maintenance.

1. Integrate an asset strategy in the prioritisation of maintenance projects.

The third criteria is applicable to all four main activity areas. This is the one brought forward from the prioritisation process for new works projects, namely reviewing projects in terms of an asset strategy. In the case of maintenance prioritization the concept of an asset strategy is also valid. However, the strategic focus is of a more practical nature, with three areas of importance: utilisation/demand; negative impact; and community needs. These three areas are discussed further below.

Asset Utilisation/demand. This is particularly important for the movement network. Areas of heavy traffic or pedestrian demand should be given priority for two reasons. Firstly, the disruptive impact, and indirect cost, of asset deterioration is greater. Secondly, the heavy demand will accelerate the deterioration at a faster rate is left unattended. Utilisation demand is also important in the social services, where a priority should be given to high use facilities.

Negative impact. This refers to an external impact and is particularly relevant in terms of environment and health impacts. These include flooding and health problems associated with deteriorated sanitation and health services.

Community needs: Prioritising maintenance activities should be particularly concerned with addressing community concerns. Local communities and users have direct experience of poor or deteriorated services and infrastructure and provide an important and valuable input to the prioritisation process.

An additional area to be explored in the prioritisation process is that of crossover affects. For example, it is useful to check for a correlation between a poor road condition and a poor drainage condition, which could indicate that the road deterioration is caused by poor drainage. In that situation, the drains responsible for road deterioration should have a very high priority, since a relatively small investment in drainage results in a significant saving from limiting road deterioration, where the cost of road maintenance would be much higher.

**Strategic area priority**

*The following shows the priority based on the community need*

1. Movement network assets
2. Environmental assets
3. Social and economic assets
4. Water supply assets

## Obtain a budget for maintenance

A summary table showing the full maintenance budget allocation from all sources. Incorporate the budget for normal maintenance activities to show the budget available for reducing the maintenance deficit.

Table 10.1 The budget source for maintenance activities

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| S/N | Infrastructure Sub-Category | Unit | Quantity | Unit Rate | 2012 EFY | Budget source |
| **A** | **Movement Network** |  |  |  |  |  |
| 1 | Roads |  |  |  |  |  |
| 1.1 | Asphalt Roads |  |  |  | - |  |
| 1.2 | Cobble Stone road maintenance | m2 | 120 | 5,100.52 | 612,062.00 | Municipality |
| 1.3 | Gravel road maintenece | m | 500 | 3,480.00 | 1,740,000.00 | Municipality |
|  | **Movement Network Total** |  |  |  | **2,352,062.00** |  |
| **B** | **Water supply Network** |  |  |  |  |  |
|  | Water line maintenance | m | 500 | 640.00 | 320,000.00 | Municipality |
|  | **Water supply total** |  | **500.00** | **640.00** | **320,000.00** |  |
| **C** | **Environmental Services** |  |  |  |  |  |
| 1.3 | Drainage maintenance | m | 30 | 22,070.00 | 662,100.00 | Municipality |
|  | **Environmental Services total** |  |  |  | **662,100.00** |  |
| **D** | **Economic and Social service** |  |  |  |  |  |
| 1 | Electric line maintenance | m | 650 | 363.85 | 236,501.00 | Municipality |
| 2 | MSE Shed maintenance | No | 5 | 42,084.02 | 210,420.10 | Municipality |
|  | **Economic and Social service total** |  |  |  | **446,921.10** |  |
|  | **Municipal Maintenance Total** |  |  |  | **3,781,083.10** |  |
| **E** | **Administrative buildings** |  |  |  |  |  |
|  | Millennium hall maintenance |  | 1 | 1,424,476.90 | 1,424,476.90 | City administration |
|  | **Administrative buildings total** |  |  |  | **1,424,476.90** |  |
|  | **Total maintenance budget** |  |  |  | **5,205,560.00** |  |

# Step-9.Convert the new works projects and the maintenance activities budgets to a 3-year rolling program

9.1 Introduction

With regard to new works projects, step 9 is concerned with updating the new works projects database, and the maintenance activities database, to ensure that both of these contain only approved projects for which funding has been agreed. These are then converted into a 3-year rolling program. The responsibility for which new works projects are allocated to each of the three years is the responsibility of the CIP team. The role of the AMP is simply to construct the program so that the projects can be tracked in step 10. For the maintenance activities, the primary responsibility for creating an implementation program for maintenance activities lies with the AMP focal person. Here, step 9 brings forward the budget for routine and periodic maintenance from step 8 and updates the database of maintenance activities associated with the maintenance deficit, to ensure that only approved maintenance activities are carried forward. If the maintenance deficit budget is drawing on funding from the CIP budget, then the final list of maintenance activities would have to be approved by the CIP team. Once that is done, these activities would be allocated to the first year of the 3-year rolling program, and a proposed budget made for years 2 and 3.

## 9.1 The new works budget

A restructured database for new works projects that is structured around the 3-year implementation program.

Table 11.1 Three year rolling plan for new works

| No | ECSPG Pillar & Project Name | Unit | Priority | EFY 2013 | | EFY 2014 | | EFY 2015 | | Total | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | Qty | Birr | Qty | Birr | Qty | Birr | Qty | Birr |
| **Pillar 6. Integrated Urban Infrastructure** | | | |  |  |  |  |  |  |  |  |
| A | [Movement Network[1]](file:///E:\UIIDP\Sawla%20town\2013%20E.C\CIP,%20AMP%20and%20REP-2013\CIP-2013\Sawla-2013-2015-PP.xls#RANGE!_ftn1) |  |  |  |  |  |  |  |  |  |  |
| 1 | Roads |  |  |  |  |  |  |  |  |  |  |
| 1.1 | Cobblestone Road |  |  |  |  |  |  |  |  |  |  |
| 1.1.1 | New | m2 | 6 | 16,540.00 | 18,050,512.64 | 19,517.20 | 21,299,604.92 | 21,468.92 | 23,429,565.41 | 57,526.12 | 62,779,682.97 |
| 1.1.2 | Rolled | m2 |  |  |  |  | - |  | - |  | - |
| 1.2 | Asphalt Road |  |  |  |  |  |  |  |  |  |  |
| 1.2.1 | New |  |  |  |  |  |  |  |  |  |  |
| 1.2.2 | **R**olled |  |  |  |  | - | - | - | - | - | - |
| 1.3 | Gravel Road |  |  |  |  |  |  |  |  |  |  |
| 1.3.1 | New | m | 2 | 738.00 | 4,405,110.40 | 870.84 | 5,198,030.27 | 957.92 | 5,717,833.30 | 2,566.76 | 15,320,973.97 |
| 1.3.2 | **R**olled |  |  |  |  |  |  |  |  |  |  |
| 1.4 | Other types of roads |  |  |  |  |  |  |  |  |  |  |
| 1.4.1 | New |  |  |  |  |  |  |  |  |  |  |
| 1.4.2 | Rolled |  |  |  |  |  |  |  |  |  |  |
| 2 | Cycle Ways, Cycle Paths |  |  |  |  |  |  |  |  |  |  |
| 2.1 | New |  |  |  |  |  |  |  |  |  |  |
| 2.2 | Rolled |  |  |  |  |  |  |  |  |  |  |
| 3 | Foot paths, |  |  |  |  |  |  |  |  |  |  |
| 3.1 | pavements, |  |  |  |  |  |  |  |  |  |  |
| 3.2 | Round about | No |  |  |  |  |  |  |  |  |  |
| 3.3 | pedestrian |  |  |  |  |  |  |  |  |  |  |
| 3.4 | walkways, |  |  |  |  |  |  |  |  |  |  |
| 4 | Road Structure |  |  |  |  |  |  |  |  |  |  |
| 4.1 | Bridge(New) | No |  |  |  |  |  |  |  |  | - |
| 4.2 | Bridge(Rolled) |  | 3 | 1.00 | 746,781.02 | 1.00 | 884,935.51 | 1.00 | 973,429.06 | 3 | 2,605,145.59 |
| 4.3 | Culvert(New) | No |  |  |  |  |  |  |  |  |  |
| 4.4 | Culvert(Rolled) |  |  |  |  |  |  |  |  |  |  |
| 5 | Street lighting |  |  |  |  |  |  |  |  |  |  |
| 5.1 | New | km | 4 | 2,560.00 | 4,630,620.21 | 3,020.80 | 5,487,284.95 | 3,322.88 | 6,036,013.45 | 8903.68 | 16,153,918.62 |
| 5.2 | Rolled | No |  |  |  |  |  |  |  |  |  |
| 6 | Bus terminals, , |  |  |  |  |  |  |  |  |  |  |
| 6.1 | bus stops |  |  |  |  |  |  |  |  |  |  |
| 6.2 | bus stations |  |  |  |  |  |  |  |  |  |  |
| 7 | Road furniture, , |  |  |  |  |  |  |  |  |  |  |
| 7.1 | road signs |  |  |  |  |  |  |  |  |  |  |
| 7.2 | traffic lights |  |  |  |  |  |  |  |  |  |  |
|  | **Sub-total Movement Network** |  |  |  | **27,833,024.28** |  | **32,869,855.65** |  | **36,156,841.22** |  | **96,859,721.15** |
| B | Water Supply Network |  |  |  |  |  |  |  |  |  |  |
| 1 | Water resources |  |  |  |  |  |  |  |  |  |  |
| 1.1 | Name of project |  |  |  |  |  |  |  |  |  |  |
| 1.2 | Etc |  |  |  |  |  |  |  |  |  |  |
| 2 | Water supply | m |  | - | - | - | - | - | - | - | - |
| 2.1 | Name of project |  |  |  |  | - | - | - | - | - | - |
| 2.2 | Etc |  |  |  |  |  |  |  |  |  |  |
|  | **Sub-total Water Supply Network** | m |  | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| C | Economic & Social Services |  |  |  |  |  |  |  |  |  |  |
| 1 | Markets |  |  |  |  |  |  |  |  |  |  |
| 1.1 | Name of project |  |  |  |  |  |  |  |  |  |  |
| 1.2 | Etc |  |  |  |  |  |  |  |  |  |  |
| 2 | Abattoir |  |  |  |  | - | - | - | - | - | - |
| 2.1 | Name of project |  |  |  |  |  |  |  |  |  |  |
| 2.2 | Etc |  |  |  |  |  |  |  |  |  |  |
| 3 | MSE Facilities/Industrial Zones |  |  |  |  |  |  |  |  |  | - |
| 3.2 | MSE Shade | No |  | 1.00 | 658,586.42 | 1.18 | 790,303.70 | 1.30 | 869,334.07 | 3.48 | 2,318,224.20 |
| 3.3 | Etc |  |  |  |  |  |  |  |  |  | - |
| 4 | Health Centres & Clinics | No |  |  |  |  |  |  |  |  |  |
| 4.1 | Name of project |  |  |  |  |  |  |  |  |  | - |
| 4.2 | Etc |  |  |  |  |  |  |  |  |  | - |
| 5 | Schools |  |  |  |  |  |  |  |  |  | - |
| 5.1 | Name of project |  |  |  |  |  |  |  |  |  | - |
| 5.2 | Etc |  |  |  |  |  |  |  |  |  | - |
|  | **Sub-total Economic & Social Services** |  |  |  | **658,586.42** |  | **790,303.70** |  | **869,334.07** |  | **2,318,224.20** |
|  | Other |  |  |  |  |  |  |  |  |  |  |
| 1 | Electricity reticulation |  |  | 900.00 | 1,913,461.99 | 1,062.00 | 2,296,154.38 | 1,168.20 | 2,525,769.82 | 3,130.20 | 6,735,386.19 |
| 1.1. | Name of project |  |  |  |  |  |  |  |  |  |  |
| 1.2 | Telecomunication |  | No |  |  | - | - | - | - | - | - |
|  | **Sub-total Other** |  |  |  | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| **Total Pillar 6. Integrated Urban Infrastructure** | | |  |  | **30,405,072.68** | **1,062.00** | **35,956,313.74** | **1,168.20** | **39,551,945.12** | **3,130.20** | **105,913,331.54** |
| **Pillar 7: Environmental, Green Services & Recreation** | | | | |  |  |  |  |  |  |  |
| D | Environmental Services |  |  |  |  |  |  |  |  |  |  |
| 1 | Drainage |  |  |  |  |  |  |  |  |  |  |
| 1.1 | Name of drainage project(New) | m | 4 | 1,132.00 | 6,338,216.76 | 1,335.76 | 7,605,860.11 | 1,469.34 | 8,366,446.12 | 3,937 | 22,310,522.98 |
| 1.2 | Ditch cover (New) | No |  |  |  | - | - | - | - | - | - |
| 1.3 | Etc |  |  |  |  |  |  |  |  |  |  |
| 2 | Sanitation |  |  |  |  |  |  |  |  |  |  |
| 2.1 | Public toilet at bus station | No |  |  |  |  |  |  |  |  |  |
| 2.2 | Etc |  |  |  |  |  |  |  |  |  |  |
| 3 | Solid Waste |  |  |  |  |  |  |  |  |  |  |
| 3.1 | Name of project |  |  |  |  |  |  |  |  |  |  |
| 3.2 | Etc |  |  |  |  |  |  |  |  |  |  |
| 4 | Liquid Waste |  |  |  |  |  |  |  |  |  |  |
| 4.1 | Name of project |  |  |  |  |  |  |  |  |  |  |
| 4.2 | Etc |  |  |  |  |  |  |  |  |  |  |
| 5 | Urban Greenery |  |  |  |  |  |  |  |  |  |  |
| 5.1 | Asphalt median | m2 |  | 3,440.00 | 1,264,929.42 | 4,059.20 | 1,517,915.30 | 4,465.12 | 1,669,706.83 | 11,964 | 4,452,551.55 |
| 5.2 | Median fence | ml |  | 3,750.00 | 3,566,497.46 | 4,425.00 | 4,279,796.95 | 4,867.50 | 4,707,776.65 | 13,043 | 12,554,071.06 |
| 6 | Parks and Play Areas |  |  |  |  |  |  |  |  |  |  |
| 6.1 | Name of project |  |  |  |  |  |  |  |  |  |  |
| 6.2 | Etc |  |  |  |  |  |  |  |  |  |  |
| 7 | Rivers, wetlands, natural areas , watershed management |  |  |  |  |  |  |  |  |  |  |
| 7.1 | Name of project |  |  |  |  |  |  |  |  |  |  |
| 7.2 | Etc |  |  |  |  |  |  |  |  |  |  |
|  | **Subtotal Environmental Services** |  |  |  | **11,169,643.63** |  | **13,403,572.36** |  | **14,743,929.60** |  | **39,317,145.59** |
| E | Other |  |  |  |  |  |  |  |  |  |  |
| **Total Pillar 7: Environmental, Green Services & Recreation** | | | | | **11,169,643.63** | **-** | **13,403,572.36** | **-** | **14,743,929.60** | **-** | **39,317,145.59** |
| **Total Pillar 8: Resilient, Inclusive and Safer Cities** | | | | |  |  |  |  |  |  |  |
| C | Economic & Social Services |  |  |  |  |  |  |  |  |  |  |
| 1 | Youth/Women Centres & Projects | No |  |  |  |  | - |  | - |  | - |
| 1.1 | Name of project |  |  |  |  |  |  |  |  |  |  |
| 1.2 | Etc |  |  |  |  |  |  |  |  |  |  |
| 2 | Fire and Ambulances Services | No |  |  |  |  |  |  |  |  |  |
| 2.1 | Name of project |  |  |  |  |  |  |  |  |  |  |
| 2.2 | Etc |  |  |  |  |  |  |  |  |  |  |
|  | **Subtotal Economic & Social Services** |  |  | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| D | Environmental Services |  |  |  |  |  |  |  |  |  |  |
| 1 | Flood Protection (retaining walls etc) | m3 |  |  |  |  |  |  |  |  | - |
| 1.1 | Name of project |  |  |  |  |  |  |  |  |  |  |
| 1.2 | Etc |  |  |  |  |  |  |  |  |  |  |
|  | **Subtotal Environmental Services** |  | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| E | Other |  |  |  |  |  |  |  |  |  |  |
| 1 |  |  |  |  |  |  |  |  |  |  |  |
| 1.1 |  |  |  |  |  |  |  |  |  |  |  |
|  | Subtotal Other |  |  |  |  |  |  |  |  |  |  |
| **Total Pillar 8: Resilient, Inclusive and Safer Cities total** | | | | | **-** |  | **-** |  | **-** |  | **-** |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | |  |  |  |  |  |  |  |  |  |  |
| 1 |  |  |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |  |  |
| 3 etc. |  |  |  |  |  |  |  |  |  |  |  |
| Municipal Administration Buildings and Other Projects which cannot be put in Pillars | |  |  |  |  |  |  |  |  |  |  |
| 1 | Buildings(Rolled) | No | 11 | 1 | 8,364,063.20 | 1.18 | 9,945,126.87 | 1.30 | 10,939,639.55 | 3 | 29,248,829.62 |
| 2 |  |  |  |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |  |  |  |
|  | **Subtotal Other** |  |  | **1** | **8,364,063.20** |  | **9,945,126.87** |  | **10,939,639.55** |  | **29,248,829.62** |
| Consultancy Services for designs and contract management/supervision | |  |  |  |  |  |  |  |  |  |  |
| 1 |  |  |  |  | - |  |  |  |  |  |  |
| **Total Consultancy Services for designs and contract management/supervision** | |  | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | **Total CIP** |  |  |  | **49,938,779.52** |  | **59,305,012.97** |  | **65,235,514.27** |  | **174,479,306.76** |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **Total Capacity Building Plan** | | |  |  | **2,148,838.70** |  | **2,363,722.57** |  | **2,600,094.83** |  | **7,112,656.10** |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **Grand Total Expenditure (CIP + CBP)** | | |  |  | **52,087,618.22** |  | **61,668,735.54** |  | **67,835,609.09** |  | **181,591,962.85** |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | Total Income |  |  |  | 52,087,618.22 |  | 61,668,735.54 |  | 67,835,609.10 |  | 181,591,962.86 |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | Surplus/Deficit |  |  |  | 0.00 | - | (0.00) | - | (0.00) | - | (0.00) |
|  |  |  |  |  |  |  |  |  |  |  |  |

Table 11.2 New works projects for 3 years based on strategic aria

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Strategic Area | EFY 2013 | EFY 2014 | EFY 2015 | Total |
| A | Movement Network | 27,833,024.28 | 32,869,855.65 | 36,156,841.22 | 36,156,841.22 |
| B | Water Supply Network | - | - | - | - |
| C | Economic & Social Services | 2,572,048.41 | 3,086,458.09 | 3,395,103.90 | 9,053,610.39 |
| D | Environmental Services | 11,169,643.63 | 13,403,572.36 | 14,743,929.60 | 39,317,145.59 |
| E | Other(Capacity building) | 2,148,838.70 | 2,363,722.57 | 2,600,094.83 | 7,112,656.10 |
| F | Municipal Administration Buildings and Other Projects which cannot be put in Pillars | 8,364,063.20 | 9,945,126.87 | 10,939,639.55 | 29,248,829.62 |
|  | **Total** | **52,087,618.22** | **61,668,735.54** | **67,835,609.09** | **120,889,082.92** |

|  |  |  |
| --- | --- | --- |
| **Strategic activity area** | **Item** | **Cost (EB)** |
| Movement network | Roads | 35,546,941.04 |
| Water supply | Water supply | 12,697,856.80 |
| Environmental services | Drainage | 4,371,600 |
| Social and Economic | Market and others | 2,720,000 |
| Building maintenance | office building | 1,900,000 |
| Total Maintenance Deficit: |  | **58,280,581.04** |

Table 11.3. Budget for reducing maintenance backlog

## 11.3The maintenance deficit budget

Table 11.4 The maintenance budget on the 3-year rolling program

| S/N | Infrastructure Sub-Category | Total Cost for 3 years | Maintenance Budget for EFY 2013 | Maintenance Budget for EFY 2014 | Maintenance Budget for EFY 2015 |
| --- | --- | --- | --- | --- | --- |
| **A** | **Movement Network** |  |  |  |  |
| 1 | Roads |  |  |  |  |
| 1.1 | Asphalt Roads | - | - | - | - |
| 1.2 | Cobble Stone road | 7,956,806.00 | 612,062.00 | 1,836,186.00 | 5,508,558.00 |
| 1.3 | Gravel road maintenance | 22,620,000.00 | 1,740,000.00 | 5,220,000.00 | 15,660,000.00 |
|  | **Movement Network Total** | **30,576,806.00** | **2,352,062.00** | **7,056,186.00** | **21,168,558.00** |
| **B** | **Water supply** |  |  |  |  |
|  | Water supply maintenance | 4,160,000.00 | 320,000.00 | 960,000.00 | 2,880,000.00 |
|  | **Water supply total** | **4,160,000.00** | **320,000.00** | **960,000.00** | **2,880,000.00** |
| **C** | **Environmental Services** |  |  |  |  |
| 1.3 | Drainage maintenance | 8,607,300.00 | 662,100.00 | 1,986,300.00 | 5,958,900.00 |
|  | **Environmental Services total** | **8,607,300.00** | **662,100.00** | **1,986,300.00** | **5,958,900.00** |
| **E** | **Economic and Social service** |  |  |  |  |
| 1 | Electric line | 2,482,333.42 | 236,501.00 | 624,362.64 | 1,621,469.78 |
| 2 | MSE Shed maintenance | 2,482,803.78 | 210,420.10 | 631,260.30 | 1,641,123.38 |
|  | **Economic and Social service total** | **4,965,137.20** | **446,921.10** | **1,255,622.94** | **3,262,593.16** |
|  | **Municipal maintenance total** | **48,309,243.20** | **3,781,083.10** | **11,258,108.94** | **33,270,051.16** |
|  | **Administration buildings** |  |  |  |  |
| 1 | Millennium Hall maintenance | 9,971,338.30 | 1,424,476.90 | 2,848,953.80 | 5,697,907.60 |
|  | **Buildings total** | **9,971,338.30** | **1,424,476.90** | **2,848,953.80** | **5,697,907.60** |
|  | **Total maintenance budget** | **58,280,581.50** | **5,205,560.00** | **14,107,062.74** | **38,967,958.76** |

# Step-10.The transition of all Completed New Works and Maintenance Projects across to the Existing Assets Databases

## Introduction

Step 10 covers two distinct areas of responsibilities. The first of these is to track new works maintenance projects and maintenance activities going forward into the future. The second responsibility is to keep track of new works projects and maintenance activities that were approved in past AMPs and to measure the outcomes against the original approved projects.

## New works projects

The implementation strategy for new works revolves around three major activities: project management; procurement; and construction management. The responsibility for all three of these activities rests with the respective specialists in the city. The role of the AMP focal person in this implementation process, which is defined as step 10 within the AMP, is to take responsibility for the database management for both new works and maintenance projects, by tracking them as they pass through the stages of project management, procurement and construction/ repair. During that implementation phase, the AMP focal person should ensure that all the records pertaining to new works and maintenance projects (in TDS 3 and TDS 5 respectively) are kept up to date and all changes to the project status are recorded. Once the new works projects have been constructed and handed over to the city, they can be incorporated into the AMP as existing assets. For the maintenance projects, the status change for completed projects will carried out by updating the condition level in the condition dataset TDS 4.

Step 10 of the AMP is essentially a monitoring and tracking exercise covering both New Works and Maintenance projects. There are four parts to the first of these and three to the second. These component parts are:

For New Works

1. Confirm the final list of all New Works projects.
2. Track their start and end dates, i.e. the project agreement and project completion dates; and enter these in the New Works database.
3. When works have been completed check that the ‘as built’ project corresponds to the original project as planned. If it has changed update the database to reflect the changes. These changes include both spatial and financial changes
4. Carry forward the list of completed projects handed over to the city and ensure that the information pertaining to every completed project is into the spatial and attribute databases of the AMP.

For Maintenance Activities

1. Confirm the final list of all maintenance activities for each of the three years.
2. Track the start and end dates for each maintenance activity and enter these in the TDS 5.
3. Once each maintenance activity has been completed, change the condition indicator for the asset in question to reflect the new status.

## Tracking New Works Projects

Tracking the New Works projects requires that the AMP team maintain a close working relationship with the Project Manager for New Works; the Procurement Specialist; and the Construction Manager. If this is done properly then the tracking of New Works, and the subsequent management of the New Works database, is a relatively simple exercise, following the four tasks set out above.

The first of these is to confirm that all of the projects identified as approved under Step 9 will actually be constructed. Issues of procurement or cash flow could still change this list, or change the years of the construction starting date. At this point any projects that have been amended, or removed from the list of new projects, should be updated or deleted from the New Works database TDS 3 and the proposed starting dates for approved final proposals should be recorded in the field allocated to this purpose.

It is then important that the AMP focal person liaises with the Procurement Specialist so that (s)he is aware of the date when each new contract is signed. As this is done the date should be entered in the database, together with the contractual completion date. During the construction phase the AMP focal person should liaise on a regular basis with the Construction Manager.

When the project has been completed, and handed over to the city, it should be checked for any changes to the project that might have taken place between the original approval of the project by the city and the completion of construction. This is important because it is the final ‘as built’ project that will be entered into the asset management database as an existing asset, not the original project description.

At this point the project should be transferred from the New Works database to the set of databases for existing assets. This is the feedback loop shown in the introduction to this manual. The database for New Works will already have a breakdown of the project by feature class. This will then form the basis for transforming the New Works into new assets in Step 3 (the spatial database and the physical attribute dataset); defining the condition in Step 4 (the Condition Indicator database); and the Costing dataset in Step 6 (the Cost and Value database).

The list below covers all the key dates that should be noted and entered into the fields provided in the new works projects database.

Approval

Date of tender invitation

Date of tender closure

Date of signing of a contract

Date of start of activity

Date of project completion

Date of handover to the city

Date when the new projects is entered into the database for existing assets

## Tracking approved maintenance activities

The approach taken in monitoring and tracking the maintenance activities is similar to that followed for New Works projects, except that, in this case, it is the infrastructure specialist who will most likely manage the maintenance program; though the Procurement specialist may also be involved. Again the maintenance projects should be tracked following the three steps outlined above, and any changes in the nature of the maintenance activity entered directly into new works database. Once the maintenance activity is completed all that is then required is to update the condition indicator in the data set TDS 4.

The list below covers all the key dates that should be noted and entered into the fields provided in the maintenance planning database.

Approval

Date of signing of a contract

Date of start of activity

Date of completion of activity

Date when the condition of the asset is updated

## Tracking past projects and maintenance activities

The integration of the AMP process into a GIS-based management system enables both new works projects and maintenance activities to be tracked with a degree of accuracy that was not available in the past. This means that, for the first time, it is possible to measure the performance of past projects and activities against the original plan.

The AMP is due for completion towards the end of the (Ethiopian Calendar) year. This means that it is not possible to provide a complete analysis for the year in which the assessment of existing assets is being carried out. To make the tracking process worthwhile, the analysis should begin by focusing on the previous year, i.e. AMP year minus 2, where a full set of statistics should be available. This provides the comparative analysis.

As an example: during the year 2011, the AMP focal person will be preparing the AMP for 2012. In this case the evaluation would be for the 2010, since that year would have figures for initiated and/or completed activities available for the entire year. The information for both approved new works projects and approved maintenance activities would be obtained from the AMP for 2010. The only difference between the two is that the performance evaluation for new works projects would be based upon projects initiated during that year, whereas the performance evaluation for maintenance activities wold be based upon completed activities. The reason for this difference is that new projects have a longer time line for construction, whereas maintenance activities would generally be of short duration, which means that there should be very little, if any, carry over into the following year.

The tables below provide templates for measuring the performance of new works projects and maintenance activities respectively. The table for maintenance activities is more comprehensive because it is able to draw on activities completed in the year. Also, this is the more important table for the AMP since the maintenance performance is more directly associated with the AMP, whereas the performance of new works project starts falls under the CIP.

Table 0.1: New works projects initiated against approved

|  |  |  |
| --- | --- | --- |
| **Strategic and Supporting Activity Areas** | **No of projects**  **proposed** | **No of**  **projects**  **initiated** |
| The Movement Network | 8 | 8 |
| The Water Supply Network |  |  |
| Environmental Services | 2 | 2 |
| Social and Economic Services | 0 | 0 |
| **Total for Strategic Activity Areas** | 10 | 10 |
| Municipal administration buildings and others cannot be put in pillars | 1 | 0 |
| **Total** | 11 | 10 |

Percentage of the number of new works projects initiated to projects approved: -**90.9%**

Table 0.2: Maintenance activities completed against approved for 2012 E.C

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Strategic and Supporting Activity Areas** | **No of activities**  **approved** | **No of activities**  **completed** | **Cost of activities**  **approved** | **Cost of activities completed** |
| The Movement Network | 1 | 1 | 100,000.00 | 98,625.74 |
| The Water Supply Network | 1 | 1 | 205,195.92 | 200,835.88 |
| Environmental Services | 1 | 1 | 120,000.00 | 116,903.54 |
| Social and Economic Services | 2 | 1 | 285,420.10 | 170,711.00 |
| Municipal administration buildings | 1 | 0 | 1,115,383.98 | 0 |
| **Total** | **6** | **4** | **1,826,000.00** | **587,076.16** |

Percentage of the number of activities completed to activities approved: ----------------------**66.67%**

Percentage of the cost of the activities completed to the cost of activities approved----------**32.15%**

## A staffing plan for year 1

Table 12.1 A staffing plan for all normal maintenance activities.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.No.** | **Infrastructure  Category** | **Responsible Department** | **No. of Staff required** | **No. of available staff** |
| 1. | Roads | Infrastructure | 5 | 2 |
| 2. | Drainage | Infrastructure | 5 | 2 |
| 3. | Ditch cover(Culvert) | Infrastructure | 6 | 2 |
| **Total** | | | **16** | **6** |

Table 12.3 new works projects started Vs projects approved for AMP 2011

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Strategic and Supporting Activity Areas** | **No of projects**  **approved** | **Cost of projects**  **approved** | **No of projects started** | **Cost of projects started** |
| The Movement Network | 7 | 8,694,687.23 | 6 | 5,931,483.69 |
| The Water Supply Network | - | - |  |  |
| Environmental Services | 3 | 1,967,655.77 | 2 | 1,667,655.77 |
| Social and Economic Services | 3 | 800,000.00 | 0 | 0 |
| **Total for strategic area** | **13** |  |  |  |
| Municipal administration buildings and others | 1 | 100,000.00 | 0 | 0 |
| Capacity building | 1 | 250,000.00 | 1 | 250,000.00 |
| Total | **15** | **14,062,343** | **9** | **7,849,139.46** |

Percentage of the number of activities completed to activities approved**------------------60%**

Percentage of the cost of the activities completed to the cost of activities approved -------- **56%**

Annex 1: Checklists for Review of AMPs, REPs, CIPs and CBPs

**MINISTRY OF URBAN DEVELOPMENT AND HOUSING**

**URBAN REVENUE ENHANCEMENT, FUND MOBILIZATION AND FINANCE BUREAU**

**URBAN INSTITUTIONAL AND INFRASTRUCTURE DEVELOPMENT PROGRAM (UIIDP)**

**CHECKLIST FOR REVIEW OF ASSET MANAGEMENT PLAN, REVENUE ENHANCEMENT PLAN & CAPITAL INVESTMENT PLAN FOR EFY 2011**

**CITY: SAWLA CITY ADMINISTRATION REGION: ………………**

**CHECKLIST FOR REVIEW OF ASSET MANAGEMENT PLAN**

|  |  |  |  |
| --- | --- | --- | --- |
| S/N | Description | Yes/No | Comment |
|  |  |  |  |
| A | GENERAL |  |  |
| 1 | Is the AMP prepared/updated for EFY 2012 (2019/20) – EFY 2012 (2019/20)? Is it prepared as per the Revised GIS-based AMP Manual dated June 2016 and consider all the10 steps? (This can be completed after B below) | Yes |  |
| 2 | Asset inventory **updated**, featuring a tabular database of all infrastructure with specification and characteristics for the all infrastructure categories as per the AMP Manual | Yes |  |
| 3 | Conditions of assets reflected in assets inventories correctly(professional input) | Yes |  |
| 4 | Asset inventory show an asset value and deficit, which calculates the remaining asset value, maintenance and rehabilitation deficit based on annual depreciation rate | Yes |  |
| B | REVIEW OF STEPS OF AMP |  |  |
| 1 | Step 1: Build the GIS Project and the Data Management Structure |  |  |
| 1.1 | Step 1.1: Establishing of a GIS project. | Yes |
| 1.2 | Step 1.2: Understanding the different databases, their role in the AMP process, and the relationship between them. | Yes |
| 1.3 | Step 1.3. Defining and creating the coordinate system for the project. | Yes |
| 1.4 | Step 1.4. The identification of a backdrop image for the project. | Yes |
| 1.5 | Step 1.5. Geo-referencing the backdrop image and integrating this into the project | Yes |
| 2 | Step 2: Build the institutional framework and the asset management structure |  |  |
| 2.1 | Step 2.1: Establishing the institutional structure. | Yes |  |
| 2.2 | Step 2.2: Defining the organisational responsibilities and relationships. | Yes |
| 2.3 | Step 2.3: Setting out the framework for an asset strategy | Yes |
| 2.4 | Step 2.4: Building a comprehensive list of all the Categories of Assets that will be included in the City’s AMP | Yes |
| 2.5 | Step 2.5: Linking Categories to operational units in the City (e.g. departments, enterprises) and identifying an AMP coordinator within each of the operational units. Note that this would not be a full-time position but a responsibility for an existing member of staff. | Yes |
| 2.6 | Step 2.6: Employing a full-time AMP focal person within the city administration, with a second person in larger cities. | Yes |
| 2.7 | Step 2.7: Building a complete list of all Feature Classes that will be included in the City’s AMP | Yes |
| 2.8 | Step 2.8: Constructing a table that allocates every feature class of asset to one of the three feature types in the GIS feature classification system. | Yes |
| 2.9 | Step 2.9: Creating a comprehensive reference identifier system for all assets included in the AMP. | Yes |
| 3 | Step 3: Compile an Inventory of Assets. |  |  |
| 3.1 | Step 3.1: Ensure that the spatial database template is linked to the GIS project. | Yes |
| 3.2 | Step 3.2: Working on one category at a time, and, within that, one feature class at a time. identify every element within each feature class. | Yes |
| 3.3 | Step 3.3: For every element, provide a unique identifier (compulsory field). | Yes |
| 3.4 | Step 3.4: For every element, enter an element identifier (compulsory field). | Yes |
| 3.5 | Step 3.5: Once an element has a unique identifier, enter the data for that element in the spatial database. | Yes |
| 3.6 | Step 3.6: Enter any additional information for the element deemed useful into the database of physical attributes, TDS 1. | Yes |
| 3.7 | Step 3.7: Once all the elements within a feature class have been entered in the data, generate a summary item for that feature class. | Yes |
| 3.8 | Step 3.8: When all feature classes have been completed create a summary table for each category of asset, by feature class. | Yes |
| 3.9 | Step 3.9: Ensure that the asset data associated with all new works handed over to the City. during the past year has been incorporated into the spatial database and database TDS 1. | Yes |
| 3.10 | Step 3.10: Ensure that assets that have been decommissioned during the past year have their data removed from the spatial database and TDS 1. | Yes |
| 4 | Step 4: Assess the Condition of the Assets. |  |  |
| 4.1 | Become familiar with the five levels of the condition indicator applicable to point and polygon feature assets. | Yes |
| 4.2 | Understand how linear feature assets require a different approach to condition assessment, which is based upon the type of deterioration specific to each feature class of assets. | Yes |
| 4.3 | Become familiar with the tables that show the different forms of deterioration for linear feature assets and how the degree of deterioration defines the condition indicator level. | Yes |
| 4.4 | Carry out a detailed survey of all assets to assess their condition, using the guidelines provided in these tables. | Yes |
| 4.5 | Become familiar with the database templates (TDS 4) showing the different forms of deterioration associated with the five condition indicator levels for each feature class of asset. | Yes |
| 4.6 | Link TDS 1 (the dataset for physical attributes) to TDS 4 to use the surface area data for linear and polygon feature assets. | Yes |
| 4.7 | Enter the condition and the relevant quantities associated with the form of deterioration in the appropriate field of TDS 4. | Yes |
| 4.8 | Develop summary tables showing the condition of all assets, listed by feature class and category, with additional sub-divisions, e.g. road surface types, where required. | Yes |
| 5 | Step 5: Calculate the Maintenance Budget and Deficit |  |  |
| 5.1 | Developing a list of maintenance actions (tasks) for each feature class of assets, by matching the maintenance action to the specific maintenance condition indicator identified in step 4. | Yes |
| 5.2 | Building a list of unit rates for each maintenance action. | Yes |
| 5.3 | Use the template TDS 4 to build the maintenance budget and deficit for each feature class of asset. | Yes |
| 5.4 | Develop a summary table of the maintenance budget requirements for all assets, listed by category. | Yes |
| 6 | Step 6: Calculate the current replacement cost and residual value of all assets. |  |  |
| 6.1 | Step 6.1: Assembling a list of unit costs for all feature classes of assets. | Yes |  |
| 6.2 | Step 6.2: Becoming familiar with the calculation of the depreciated cost of assets (i.e. their current value), and all its component parts. | Yes |
| 6.3 | Step 6.3: Collecting data for all the variables that contribute to the calculation of the depreciated cost, for all assets. | Yes |
| 6.4 | Step 6.4: Linking database TDS 1 with the database for cost and value (TDS 2) and entering the data into the database TDS 2. | Yes |
| 6.5 | Step 6.5: Producing a summary table that provides the current replacement cost and the current value (depreciated cost) of assets for each feature class. | Yes |
| 7 | Step 7: Cost and Prioritise New Works Projects within the CIP Process. |  |  |
| 7.1 | Step 7.1: Bring forward, from step 6, the list of unit replacements costs, to estimate for new works projects. | Yes |  |
| 7.2 | Step 7.2: Collect together the full list of new works projects proposed by the CIP team. | Yes |
| 7.3 | Step 7.3: Using the list of unit costs for new works, build the project cost for the proposed new works projects, using the dataset TDS 3. | Yes |
| 7.4 | Step 7.4: Provide a summary of all new works project proposals, broken down by feature class. | Yes |
| 7.5 | Step 7.5: Build a graphical breakdown of proposed project expenditure, using pie or bar charts, for the major investment activity areas. | Yes |
| 8 | Step 8: Develop the Maintenance Plan. |  |  |
| 8.1 | Step 8.1. Bring forward the list of routine and periodic maintenance activities and the maintenance deficit from step 5. | Yes |  |
| 8.2 | Step 8.2. Analyse the maintenance deficit to gain an understanding of the deterioration across different assets and carry out a quantitative assessment of the spread, and relative cost, of deterioration across and within different strategic activity areas. | Yes |
| 8.3 | Step 8.3. Prioritise the maintenance activities using a strategic analysis based upon the guidelines set out in the body of step 8. | Yes |
| 8.4 | Step 8.4. Agree a budget allocation for routine and periodic maintenance and backlog maintenance activities required to address the maintenance deficit. | Yes |
| 8.5 | Step 8.5. Build a prioritised list of maintenance activities, showing the cut-off point equating to the budget available. | Yes |
| 8.6 | Step 8.6. Ensure that the prioritised list provides a balance both across and within the strategic activity areas. | Yes |
| 9 | Step 9: Convert the Agreed Budget for all New Works and Maintenance Projects to a 3-year Rolling Program. |  |  |
| 9.1 | Step 9.1. Converting the new works projects database to a 3-year rolling program. | Yes |  |
| 9.2 | Step 9.2. Updating the list of maintenance projects and creating an implementation strategy. | Yes |
| 9.3 | Step 9.3. Ensuring that all maintenance activities going forward have an approved budget. | Yes |
| 9.4 | Step 9.4. Building a 3-year rolling program for maintenance activities. | Yes |
| 10 | Step 10: Manage the transition of all completed new works and maintenance projects across to the existing assets databases. |  |  |
| 10.1 | Step 10.1: Monitor all new works projects through procurement and construction. | Yes |  |
| 10.2 | Step 10.2: At the point of handover of new works projects to the City, update the costs and spatial and attribute data to reflect any changes that were made during construction. | Yes |
| 10.3 | Step 10.3: At the point of handover of new works projects to the City, take all the appropriate information on the completed project and transfer this to the spatial data base and the attribute databases TDS 1 (physical properties) and TDS 2 (cost and value of assets). | Yes |
| 10.4 | Step 10.4: Once this is done delete the spatial data link from the new works database and mark the project as completed. | Yes |
| 10.5 | Step 10.5: Track all approved maintenance activities through their maintenance planning process. | Yes |
| 10.6 | Step 10.6: Once completed, amend the Asset Condition database to reflect the new condition. | Yes |
| 10.7 | Step 10.7: Identify all projects completed in the last full year of operation (AMP year minus 2). | Yes |
| 10.8 | Step 10.8: Compare the list of initiated projects to the proposals for the last full year of operation (AMP year minus 2). | Yes |
| 10.9 | Step 10.9: Compare the list of maintenance activities completed against activities proposed for the last full year of operation (AMP year minus 2). | Yes |
| 11 | Final Maintenance Plan  How much is the operation and maintenance requirement and is it all reflected in the CIP? Or how is it detailed in the AMP? |  | **AMP** Table 9.2 on page 49 Birr**1,826,000.00**for EFY 2012  **CIP**Table 14 on page 48**Total**  Birr**1,826,000.00** for EFY 2012  **REP** Table 5.1. on page 23 Total Birr**1,826,000.00** for EFY 2012 |
| 12 | Total Maintenance Deficit as per AMP |  | Birr **8,498,204.00**(Table 7.5 on page 40) |
| 13 | Total Asset Replacement Cost |  | Birr **512,214,030.08** (Table8.2. on page 44) |
| 14 | Final Maintenance Budget Analysis  Expected maintenance budget as per AMP Manual is the lesser of either 2% of Asset Replacement Cost or 10% of CIP |  | Maintenance Budget as % of CIP**: 10.12%**  Maintenance Budget as % of Asset Replacement Cost: 0.35**%**  Maintenance Budget as % of Total Maintenance Deficit: 6.15**%**  Maintenance Budget as % of Municipal Revenues: 10.72**%** |
| 15 | Linkages between AMP, REP and CIP. |  | **AMP** Table 9.2 on page 46 Birr**1,826,000.00** for EFY 2012  **CIP**Table 14 on page 51 **Total**  Birr**1,826,000.00** for EFY 2012  **REP** Table 5.2 on page 23 Total Birr**1,826,000.00** for EFY 2012 |
| 16 | Major comments |  |  |
| C | OVERALL CONCLUSIONS AND RECOMMENDATIONS ON AMP |  | AMP is acceptable/not acceptable and recommended/not recommended for approval/signing by BUDHo |

Annex 2. ASSET REGISTER UNDER STREET LIGHT NETWORK CATEGORY

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **STREET LIGHT** | | | | | | | | | |
| **Auto ID** | **Street Light ID** | **Start Node** | **End Node** |  |  |  |  |  |  |
| **Kebele** | **Unit** | **Sodium** | **Florecent** | **Remark** |  |
| **1** | RN\_BK\_001 | Robot | Lukanda house |  | NO |  | 8 |  |  |
| 2 | RN\_Main Road\_002 | Water office | Total Gas Station | 03-01(Main Road) | " | 25 |  |  |  |
| 3 | RN-YK\_003 | Bus Station | Muslim Mosque |  | " | 16 |  |  |  |
| 4 | RN\_YK\_004 | Kale Hiwote Church | End of Stadium |  | " |  | 24 |  |  |
|  |  | **TOTAL** |  |  |  | 41 | 32 |  |  |

Annex 3. Asset Inventory under Urban Road Network Category as of June 2012 E.C

Road Catagory Coble Road

| **OBJECTID \*** | **Route\_Id** | **Actual length** | **Road\_**  **surface** | **Carriage\_**  **Width** | **Right\_Way\_**  **Width\_M\_** | **Area** | **Equivalent\_Length in KM to 7m width** | **Construction\_Year\_E\_C\_** | **Road\_Start\_offset\_1** | **Road\_End\_Offset** | **Condition** | **X\_Start\_Point** | **X\_End\_Point** | **Y\_Start\_Point** | **Y\_End\_Point** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4 | **RNCR\_SWMU\_018\_001** | 327 | CR | 10 | 12 | 2,616.0 | 0.374 | 2009 | Tulu Mazoria | AtoLemaGodana | Good | 265120.6 | 265109.2 | 696736.5 | 697062.9 |
| 9 | **RNCR\_SWMU\_018\_002** | 170 | CR | 10.5 | 14 | 1,360.0 | 0.194 | 2008 | Sawla hotel | Nurumuhe Building | Good | 265515.9 | 265677 | 696819.7 | 696873.7 |
| 10 | **RNCR\_SWMU\_018\_003** | 310 | CR | 8.5 | 10 | 2,480.0 | 0.354 | 2010 | End of Mosque fence | Front Of Comer bank | V.Good | 265697.7 | 265615.3 | 696836.7 | 697128.6 |
| 12 | **RNCR\_SWMU\_018\_004** | 205 | CR | 10.5 | 12 | 1,640.0 | 0.234 | 2010 | BezabihBelayneh | Milinium Hall North | Good | 265127.6 | 265332.9 | 696870.6 | 696878.6 |
| 15 | **RNCR\_SWMU\_018\_005** | 52 | CR | 6 | 8 | 312.0 | 0.045 | 2007 | Main road | TesfayeTaye | Poor | 265292.1 | 265290.9 | 696746 | 696798.3 |
| 16 | **RNCR\_SWMU\_018\_006** | 50 | CR | 7 | 10 | 400.0 | 0.057 | 2008 | Memihiranmahibersh | DebelaDagero | Good | 265433.8 | 265430.8 | 696752.9 | 696802.8 |
| 17 | **RNCR\_SWMU\_018\_007** | 125 | CR | 12 | 15 | 1,000.0 | 0.143 | 2008 | Tadesewaliya house | TekleTinsaye | V.Good | 265613.7 | 265568.4 | 696853.9 | 696968 |
| 18 | **RNCR\_SWMU\_018\_008** | 80 | CR | 8 | 10 | 640.0 | 0.091 | 2008 | Wurotej bet | Limat Bank(Woraba) | V.good | 265590 | 265511.1 | 696898.5 | 696884.7 |
| 19 | **RNCR\_SWMU\_018\_009** | 60 | CR | 10 | 8 | 480.0 | 0.069 | 2009 | AdemAbdela | FelegenewayGrocery | Good | 265488.5 | 265431.4 | 696877.4 | 696876.5 |
| 20 | **RNCR\_SWMU\_018\_010** | 204 | CR | 9.5 | 12 | 1,632.0 | 0.233 | 2008 | Bola Kebele office | Nuru G+2 Building | Good | 265426.4 | 265409 | 696813 | 697014.4 |
| 21 | **RNCR\_SWMU\_018\_011** | 155 | CR | 8 | 10 | 1,240.0 | 0.177 | 2009 | FitsumPawlos | BiregaTej bet | Good | 265479.8 | 265327.1 | 697033.8 | 697002.4 |
| 22 | **RNCR\_SWMU\_018\_012** | 166 | CR | 8 | 12 | 1,328.0 | 0.190 | 2008 | City Police Office | High court back | Good | 266095 | 266254.6 | 697069 | 697114.9 |
| 23 | **RNCR\_SWMU\_018\_013** | 185 | CR | 9 | 10 | 1,480.0 | 0.211 | 2009 | AnduwalemLeulseged | AbebeLeta | Good | 266204 | 266145.3 | 697105.8 | 697279.4 |
| 24 | **RNCR\_SWMU\_018\_014** | 290 | CR | 8 | 10 | 2,320.0 | 0.331 | 2010 | Gujadedila | BogaleFeyisa | Good | 266137.7 | 266056.5 | 697087.7 | 697366 |
| 25 | **RNCR\_SWMU\_018\_015** | 367 | CR | 11 | 13 | 2,936.0 | 0.419 | 2007 | NOC | New Adminstration | Good | 266298.9 | 266463.6 | 696991.9 | 696668.5 |
| 26 | **RNCR\_SWMU\_018\_016** | 156 | CR | 10 | 12 | 1,248.0 | 0.178 | 2008 | NurselamSheget | defaru | Good | 265754.2 | 265656.7 | 696656.8 | 696777.9 |
| 27 | **RNCR\_SWMU\_018\_017** | 219 | CR | 9 | 11 | 1,752.0 | 0.250 | 2008 | yidegoseid | yohanisbundure | good | 265642.2 | 265852.3 | 696631.3 | 696668.8 |
| 28 | **RNCR\_SWMU\_018\_018** | 180 | CR | 10 | 9 | 1,440.0 | 0.206 | 2208 | jemal | melke photo | poor | 265693.8 | 265522.2 | 696714.1 | 696674.1 |
| 29 | **RNCR\_SWMU\_018\_019** | 160 | CR | 8 | 10 | 1,280.0 | 0.183 | 2008 | selemon | eyasu | Good | 265579.9 | 265585 | 696673.2 | 696514.3 |
| 30 | **RNCR\_SWMU\_018\_020** | 166 | CR | 9 | 11 | 1,328.0 | 0.190 | 2006 | shesufmohamed | Abebe H/mariam | good | 265631.4 | 265641.7 | 696681.3 | 696516.8 |
| 31 | **RNCR\_SWMU\_018\_021** | 209 | CR | 8.5 | 10 | 1,672.0 | 0.239 | 2008 | jon | megenagnakebele | good | 265954.9 | 265838 | 696528.1 | 696695.4 |
| 32 | **RNCR\_SWMU\_018\_022** | 397 | CR | 7.5 | 10 | 3,176.0 | 0.454 | 2007 | Minda | Birehan Bank | poor | 265495.2 | 265106.5 | 696672.8 | 696658.8 |
| 33 | **RNCR\_SWMU\_018\_023** | 120 | CR | 8 | 10 | 960.0 | 0.137 | 2010 | Dejene G/Tsadik | BereketTadsse | V.Good | 264834.5 | 264804.4 | 696289.4 | 696172 |
| 34 | **RNCR\_SWMU\_018\_024** | 170 | CR | 9 | 10 | 1,360.0 | 0.194 | 2009 | BerekeTadesse | Front Of botrekebel | V.Good | 264800.4 | 264618.9 | 696165.7 | 696211 |
| 35 | **RNCR\_SWMU\_018\_025** | 128 | CR | 8 | 10 | 1,024.0 | 0.146 | 2009 | Seyoum G/mariam | ELPA Office Front | V.Good | 265507.7 | 265383.5 | 696371.6 | 696373.6 |
| 36 | **RNCR\_SWMU\_018\_026** | 138 | CR | 8 | 10 | 1,104.0 | 0.158 | 2010 | Etenesh | Habtamu | V.Good | 265440.3 | 265442.7 | 696367.7 | 696230.7 |
| 37 | **RNCR\_SWMU\_018\_027** | 210 | CR | 8 | 10 | 1,680.0 | 0.240 | 2008 | Wondimu | Tadesse | Good | 265375.6 | 265366.8 | 696447.8 | 696654.9 |
| 38 | **RNCR\_SWMU\_018\_028** | 63.5 | CR | 9.5 | 12 | 508.0 | 0.073 | 2008 | Habtamu | GoffaMedehanit | Good | 265366.2 | 265363.1 | 696666.7 | 696723.6 |
| 42 | **RNCR\_SWMU\_018\_029** | 57 | CR | 8 | 10 | 456.0 | 0.065 | 2008 | TekleMuyno | Tsahay | V.Good | 265293.2 | 265292.2 | 696660.8 | 696718.5 |
| 43 | **RNCR\_SWMU\_018\_030** | 62 | CR | 8 | 812 | 496.0 | 0.071 | 2008 | UttaUshule | Asebech | Good | 265373.9 | 265377.1 | 696429.7 | 696368.7 |
| 44 | **RNCR\_SWMU\_018\_031** | 180 | CR | 10 | 8 | 1,440.0 | 0.206 | 2009 | Front Of Hospital | Front Of Hospital | Poor | 266652.8 | 266779.2 | 697093.2 | 696966 |
| 45 | **RNCR\_SWMU\_018\_032** | 55 | CR | 8 | 10 | 440.0 | 0.063 | 2010 | Bogale | New Asphalt | Good | 266009.5 | 266062.4 | 697357.3 | 697372.3 |
| 47 | **RNCR\_SWMU\_018\_033** | 205 | CR | 8.5 | 10 | 1,640.0 | 0.234 | 2011 | EndiriasDamtew | DeribeDengo | V.good | 265293.6 | 265304.1 | 696651.1 | 696446.8 |
| 48 | **RNCR\_SWMU\_018\_034** | 125 | CR | 8 | 10 | 1,000.0 | 0.143 | 2011 | ZerituMelka | D/G polce back | V.Good | 265349.2 | 265404.7 | 697131.4 | 697023.6 |
| 49 | **RNCR\_SWMU\_018\_035** | 168 | CR | 10 | 12 | 1,344.0 | 0.192 | 2011 | New Admistration fen | New Admistration fen | V.Good | 266329.9 | 266451.4 | 696555.6 | 696672.3 |
| 51 | **RNCR\_SWMU\_018\_036** | 410 | CR | 8.5 | 10 | 3,280.0 | 0.469 | 2011 | Dirsa bar | Megenagnakebele | good | 265528.3 | 265923.5 | 696509 | 696571 |
| 52 | **RNCR\_SWMU\_018\_037** | 198 | CR | 8 | 11 | 1,584.0 | 0.226 | 2011 | Kidanemihiret Road | AbushTej Bet | V.Good | 265175.6 | 265186 | 697075.3 | 696878.6 |
| 53 | **RNCR\_SWMU\_018\_038** | 62 | CR | 9 | 11 | 496.0 | 0.071 | 2010 | Back of Hall | Back of Hall | Good | 265186.7 | 265192.5 | 696870.6 | 696807.9 |
| 54 | **RNCR\_SWMU\_018\_039** | 150 | CR | 9 | 10 | 1,200.0 | 0.171 | 2011 | Dejene G/Tsadik | HabtamuAlemu | V.Good | 264833.7 | 264687.1 | 696296.6 | 696328.5 |
| 62 | **RNCR\_SWMU\_018\_040** | 224 | CR | 9 | 12 | 1,792.0 | 0.256 | 2006 | DuzaCinic | Milinum Hall | Poor | 265123.1 | 265346.3 | 696800 | 696800.4 |
| 63 | **RNCR\_SWMU\_018\_041** | 134 | CR | 8.5 | 10 | 1,072.0 | 0.153 | 2006 | Dawud Suk | TekleMuyno Building | Poor | 265357.9 | 265492.2 | 696802.6 | 696813.9 |
| 64 | **RNCR\_SWMU\_018\_042** | 350 | CR | 9.5 | 10 | 2,800.0 | 0.400 | 2008 | D/G/Police Front | Main Road | Good | 265302 | 265359 | 697092.6 | 696749.2 |
| **Total Sum** |  | **7442.5** |  |  |  | **59,436.0** | **8.49** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | 8.49 |  |  |  |  |  |  |  |  |  |

Annex 4. Asset Inventory under Urban Road Network Category as of June 2012 E.C

**Road Category Gravel**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Drian\_ID | Node\_Start | Node\_End\_P | Length | Side\_Of\_Dr | Constracti | Type\_Of\_Ro | Year\_Of\_Co | Condition |
| **RNMD\_SWMU\_018\_001** | SSPS Fence(Cemetry) | End of studeim left | 505 | Right | Massonry | GR | 2007 | Poor |
| **RNMD\_SWMU\_018\_002** | Beyene(studium Right | BekeleBera | 226 | Right | Massonry | GR | 2007 | Poor |
| **RNMD\_SWMU\_018\_003** | Studium(Asphalt 00) | End of Mangari(20m) | 686 | Left | Massonry | GR | 2008 | Good |
| **RNMD\_SWMU\_018\_004** | City police office | High Court back | 165 | Right | Massonry | CB | 2008 | Good |
| **RNMD\_SWMU\_018\_005** | Yohanis g/Mariam | AbebeLeta | 184 | Left | Massonry | CB | 2009 | Good |
| **RNMD\_SWMU\_018\_006** | Front Kust No2 Schol | Front GujaDedila | 177 | Right | Massonry | CB | 2010 | Good |
| **RNMD\_SWMU\_018\_007** | GujaDedila | BogaleFeyissa | 290 | Left | Massonry | CB | 2010 | Good |
| **RNMD\_SWMU\_018\_008** | BogaleFeyisa | Kust No 2 Schol back | 166 | Right | Massonry | CB&GR | 2010 | Good |
| **RNMD\_SWMU\_018\_009** | Kirubel Hotel | TsangaChoramo | 460 | Left | Massonry | GR | 2009 | Good |
| **RNMD\_SWMU\_018\_010** | ArargeTsona | AsireBorena | 255 | Left | Massonry | GR | 2006 | Good |
| **RNMD\_SWMU\_018\_011** | Haronsamuel | MG Lease sefer | 531 | Left | Massonry | GR | 2008 | Good |
| **RNMD\_SWMU\_018\_012** | Right Side Hall | Right Side Hall | 141 | Right | Massonry | CB | 2010 | Good |
| **RNMD\_SWMU\_018\_013** |  |  | 45 | Right | Massonry | ER | 2010 | Good |
| **RNMD\_SWMU\_018\_014** | Inspector Mulgeta | Aklilu mother | 115 | Left | Massonry | ER | 2009 | Good |
| **RNMD\_SWMU\_018\_015** | Inspector Mulgeta | Chole | 240 | Right | Massonry | ER | 2009 |  |
| **RNMD\_SWMU\_018\_016** | MemirTewodaj | TagelTsegaye | 320 | Left | Massonry | GR | 2009 | Poor |
| **RNMD\_SWMU\_018\_017** | Front Of Kidanem | Front Of Kidanem | 280 | Right | Massonry | GR | 2009 |  |
| **RNMD\_SWMU\_018\_018** | Front Of Kidanem | Wonba River | 280 | Left | Massonry | GR | 2009 |  |
| **RNMD\_SWMU\_018\_019** | Sawla hotel | Nurumuhe(Aregadem) | 170 | Right | Massonry | CB | 2008 | Poor |
| **RNMD\_SWMU\_018\_020** | Abdela | TekelemuynoBuilding | 137 | Right | Massonry | CB | 2007 | Poor |
| **RNMD\_SWMU\_018\_021** | Bola Nigd office | Duza Clinic | 62 | Right | Massonry | CB | 2007 |  |
| **RNMD\_SWMU\_018\_022** | AnduwaleEshetu | AbushTej Bet | 181 | Left | Massonry | CB | 2008 | Good |
| **RNMD\_SWMU\_018\_023** | front to tulu | atolemagodana | 325 | R | Massonry | CB | 2009 | good |
| **RNMD\_SWMU\_018\_024** | Minda | Birehan Bank | 397 | Left | Massonry | CB | 2007 | Poor |
| **RNMD\_SWMU\_018\_025** | Wurotej bet | Limat Bank | 80 | Right | Massonry | CB | 2008 | Poor |
| **RNMD\_SWMU\_018\_026** | FrontOfcultureHall | FrontOfcultureHall | 137 | Right | Massonry |  |  |  |
| **RNMD\_SWMU\_018\_027** | Solomon Biru | Chole | 357 | Right | Massonry | GR | 2008 | Poor |
| **RNMD\_SWMU\_018\_028** | YohanisBundure | Biranu G/Hiwot | 85 | Left | Massonry | CB | 2009 | Good |
| **RNMD\_SWMU\_018\_029** | Sheyusufmohamesuk | Yohanisbundure | 246 | right | Massonry | CB | 2008 | good |
| **RNMD\_SWMU\_018\_030** | Jemal Mohamed | Melke Photo | 176 | Right | Massonry | CB | 2006 | Poor |
| **RNMD\_SWMU\_018\_031** | Bola Kebele Office | Nuru G+2 boulding | 204 | Left | Massonry | CB | 2008 | V.Good |
| **RNMD\_SWMU\_018\_032** | FitsumPawlos | SintayewKeshere | 160 | Right | Massonry | CB | 2008 | V.Poor |
| **RNMD\_SWMU\_018\_033** | AdanechAgena | Kebede | 175 | Left | Massonry | GR | 2010 | Good |
| **RNMD\_SWMU\_018\_034** |  |  | 345 | Left | Massonry | CB | 2009 |  |
| **RNMD\_SWMU\_018\_035** | Tariku Kassa | HabtamuAlemu | 330 | Left | Massonry | CB&GR | 2008 | Good |
| **RNMD\_SWMU\_018\_036** | Asfaw | Abebech | 240 | Right | Massonry | GR | 2008 | Poor |
| **RNMD\_SWMU\_018\_037** | Lukas | LitleBrige | 230 | Right | Massonry | ER | 2009 | Poor |
| **RNMD\_SWMU\_018\_038** | yidegoseid | Defaru clinic | 107 | right | Massonry | CB | 2008 | Good |
| **RNMD\_SWMU\_018\_039** | Abebe h/mariam | Sheyesufmohamed | 168 | Right | Massonry | CB | 2006 | Good |
| **RNMD\_SWMU\_018\_040** | Ali Suwali | Merka Fanta | 45 | Right | Massonry | GR | 2006 | Good |
| **RNMD\_SWMU\_018\_041** | SolomomNegash | YochaNigid (Old) | 290 | Right | Massonry | GR | 2007 | Poor |
| **RNMD\_SWMU\_018\_042** | MananaMadara | Wonba | 233 | Right | Massonry | GR | 2008 | Good |
| **RNMD\_SWMU\_018\_043** | LidetaEntrace | Tenatabiya Fence | 225 | Right | Massonry | GR | 2007 | Good |
| **RNMD\_SWMU\_018\_044** | Asefa H/silase | AbitoTeshome | 328 | Left | Massonry | GR | 2003 | Good |
| **RNMD\_SWMU\_018\_045** | AbitoTeshome | IsipeDicha farmers | 325 | Left | Massonry | GR | 2007 | Good |
| **RNMD\_SWMU\_018\_046** | DejeneBanja | Sesa Ada | 107 | Right | Massonry | CB | 2008 | Good |
| **RNMD\_SWMU\_018\_047** | Universal college | Eg/r Church | 298 | Left | Massonry | GR | 2010 | Good |
| **RNMD\_SWMU\_018\_048** | NuruMuhe(aregadem) | Daniel | 425 | Left | Massonry | CB&GR | 2010 | V.Good |
| **RNMD\_SWMU\_018\_049** | Etenesh | Habtamu | 138 | Left | Massonry | CB | 2010 | V.Good |
| **RNMD\_SWMU\_018\_050** | Seyoum G/mariam | Elpa Office | 128 | Right | Massonry | CB | 2009 | Poor |
| **RNMD\_SWMU\_018\_051** | Back of Hall | Back of Hall | 61 | Right | Massonry | CB | 2009 | Good |
| **RNMD\_SWMU\_018\_052** | Zirko School | Abushtej bet | 190 | Right | Massonry | CB | 2011 | V.Good |
| **RNMD\_SWMU\_018\_053** | Zirko School | Anduwaleeshetu | 85 | Left | Massonry | CB | 2008 | Good |
| **RNMD\_SWMU\_018\_054** | ZerituMelka | D/G Police back | 125 | Left | Massonry | CB | 2011 | V.Good |
| **RNMD\_SWMU\_018\_055** | Habtamu | Goffamedanit | 63.5 | Left | Massonry | CB | 2008 | V.Good |
| **RNMD\_SWMU\_018\_056** | Teklemuyno | Tsahaybaltina | 65 | Right | Massonry | CB | 2008 | V.Good |
| **RNMD\_SWMU\_018\_057** | TagelTadese | Mamme Grocery | 150 | Right | Massonry | GR | 2008 | Good |
| **RNMD\_SWMU\_018\_058** | Wondim Grocery | Tadesse | 213 | Right | Massonry | CB | 2010 | V.Good |
| **RNMD\_SWMU\_018\_059** | EndiriasDamtew | DeribeDengo | 205 | Right | Massonry | CB | 2011 | V.Good |
| **RNMD\_SWMU\_018\_060** | UttaUshule | Yohanis | 195 | Left | Massonry | CB&GR | 2008 | V.Good |
| **RNMD\_SWMU\_018\_061** | Ambaye | Dilgofudo | 92 | Right | Massonry | ER | 2010 | V.good |
| **RNMD\_SWMU\_018\_062** | Wonba River | Primary School end | 442 | Right | Massonry | GR | 2007 | Good |
| **RNMD\_SWMU\_018\_063** | Tadesewaliya house | TekleTinsaye | 125 | Left | Massonry | CB | 2009 | good |
| **RNMD\_SWMU\_018\_064** | Dejene G/Tsadik | BereketTadese | 140 | Right | Massonry | CB | 2010 | V.Good |
| **RNMD\_SWMU\_018\_065** | BereketTadesse | Front Of BotreKebel | 190 | Left | Massonry | CB | 2009 | V.Good |
| **RNMD\_SWMU\_018\_066** | Main Road | - | 50 | Right | Massonry | GR | 2010 | V.Good |
| **RNMD\_SWMU\_018\_067** | Main Road | - | 50 | Left | Massonry | GR | 2010 | V.Good |
| **RNMD\_SWMU\_018\_068** | ZerihunKifle | Yosef Muse | 111 | Right | Massonry | ER | 2010 | Poor |
| **RNMD\_SWMU\_018\_069** | Gamanko | Ullo | 155 | Right | Massonry | Gr | 2009 | Poor |
| **RNMD\_SWMU\_018\_070** | Dikre | Fantaye | 51 | Right | Massonry | GR | 2009 | Good |
| **RNMD\_SWMU\_018\_071** | Samuel | Olaye | 52 | Left | Massonry | GR | 2009 | Good |
| **RNMD\_SWMU\_018\_072** | Zeritu | Gosaye | 110 | Left | Massonry | GR | 2009 | Good |
| **RNMD\_SWMU\_018\_073** | Demise Daydo | MohamenShibire | 120 | Right | Massonry | ER | 2011 | V.Good |
| **RNMD\_SWMU\_018\_074** | FelegeNeway Grocery | AdemAbdela | 60 | Right | Massonry | CB | 2009 | Good |
| **RNMD\_SWMU\_018\_075** | front to tulu | near cherch | 328 | L | Massonry | CB | 2009 | good |
| **RNMD\_SWMU\_018\_076** |  | memirtemariyam | 339 | R | Massonry | GR | 2009 | good |
| **RNMD\_SWMU\_018\_077** | to wonba | atoketema | 350 | R | Massonry | GR | 2009 | good |
| **RNMD\_SWMU\_018\_078** | to wonba | to cherch | 321 | R | Massonry | GR | 2009 | good |
| **RNMD\_SWMU\_018\_079** | Solomon | Eyasu bade | 160 | Left | Massonry | CB | 2008 | Good |
| **RNMD\_SWMU\_018\_080** | Dirsha Bar | Megenagnakebele | 410 | Right | Massonry | CB | 2006 | Poor |
| **RNMD\_SWMU\_018\_081** | Left of Chatolic | Tele towr | 355 | Left | Massonry | GR | 2009 | Good |
| **RNMD\_SWMU\_018\_082** | Kalehiwot end(No2) | Kalehiwot end(No1) | 325 | Right | Massonry | GR | 2009 | Good |
| **RNMD\_SWMU\_018\_083** | South part bus st/o | End of main market | 204 | Right | Massonry | GR | 2007 | Poor |
| **RNMD\_SWMU\_018\_084** | Tele Towr | Sub police Station | 195 | Right | Massonry | GR | 2007 | Poor |
| **RNMD\_SWMU\_018\_085** | MananaMadara(front) | Wonbawonz | 226 | Left | Massonry | GR | 2010 | Good |
| **RNMD\_SWMU\_018\_086** | EsraelJara | Meles school | 630 | Right | Massonry | GR | 2007 | Poor |
|  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **no** | **region/area** | **line type** | **service life** | **existing diameter (inch)** | **length)m)** | **unit price** | **total** |
|  |  | cast iron |  |  |  |  |  |
| 1 | **from office reservoir to k.site reservoir** | " " " | 26 | 4" | 600.00 | 2000 | 1,200,000.00 |
| 2 | from office reservoir to solomondemena building | " " " |  | 4" | 450.00 | 2000 | 900,000.00 |
| 3 | from solomondemena building to bola kebeleadmnstr | " " " |  | 4" | 300.00 | 2000 | 600,000.00 |
| 4 | from bola kebeleadmnstr to maderejhejha house | " " " |  |  | 240.00 | 2000 | 480,000.00 |
| 5 | from yikanugulilathom to kerakebele | " " " |  |  | 210.00 | 2000 | 420,000.00 |
| 6 | from kerakebelew.p to atojmberezeleke house | " " " |  |  | 145.00 | 2000 | 290,000.00 |
| 7 | from okashe source to office reservior |  |  |  | 718.00 | 2000 | 1,436,000.00 |
| 8 | from mochona source to mellinium hall | pvc |  | 2½" | 1,094.00 | 500 | 547,000.00 |
| 9 | from mellinium hall to end of asphalt throghkerakebele | Gs |  | 2½" | 429.00 | 500 | 214,500.00 |
| 10 | from office to CBE throgh main road | " " " |  | 1¼ | 610.00 | 81 | 49,410.00 |
| 11 | infront of kalehiwot church 2 | HDPE |  | 1" | 238.00 | 81 | 19,278.00 |
| 12 | from Kida.m .reservoir to end of asphalt | Gs |  | 1" | 578.00 | 280 | 161,840.00 |
| 13 | megenagna asphalt to muna,asefer | Gs |  | ¾" | 318.00 | 75 | 23,850.00 |
| 14 | frommazegzja to kalehiwot. 1 front (left side) | Gs |  | 1" | 510.00 | 75 | 38,250.00 |
| 15 | from yitbarek H/mariyam to end of asphalt | plastic |  | 1¼ | 375.00 | 81 | 30,375.00 |
| 16 | from andualemluliseged to drijt front | Gs |  | 1" | 426.00 | 75 | 31,950.00 |
| 17 | from CBE to assefaanara | HDPE |  | 1½" | 482.00 | 81 | 39,042.00 |
| 18 | from CBE right side to assefaanara home | HDPE |  | ¾" | 383.00 | 75 | 28,725.00 |
|  |  |  |  |  | 8,106.00 |  |  |
|  | TOTAL |  |  |  |  | **15,904.00** | **6,510,220.00** |
| **no** | **region/area** | **line type** | **service life** | **existing diameter (inch)** | **length)m)** | **unit price** | **total** |
| 1 | from bus station to megenagnkebele | HDPE |  | ½" | 434.00 | 75 | 32,550.00 |
| 2 | Abinet T/t bet to birhanushenkore home | HDPE |  | ¾" | 241.00 | 75 | 18,075.00 |
| 3 | zirko side banaka region | HDPE |  | ¾" | 674.00 | 75 | 50,550.00 |
| 4 | from atoergeteabera to abebeminda | HDPE |  | ½" | 200.00 | 65 | 13,000.00 |
| 5 | from milunium hall to kasumamo | HDPE |  | ¾" | 240.00 | 75 | 18,000.00 |
| 6 | bola kebelebanaka side | HDPE |  | 1" | 896.00 | 75 | 67,200.00 |
| 7 | megenagna asphalt to Zenawachisoh.m | HDPE |  | ¾" | 320.00 | 75 | 24,000.00 |
| 8 | from shell to Abebeatsa | HDPE |  | ¾" | 430.00 | 75 | 32,250.00 |
| 9 | from hospital front to back of hospital | HDPE |  | 1" | 764.00 | 75 | 57,300.00 |
| 10 | from Dahilack hotel to Amanuel church | HDPE |  | ¾" | 470.00 | 65 | 30,550.00 |
| 11 | from university to suka | HDPE |  | 1" | 2,045.00 | 82 | 167,690.00 |
| 12 | from Ali suali to Gedamsefer | HDPE |  | 1" | 1,055.00 | 82 | 86,510.00 |
|  | **total** |  |  |  | **7,769.00** |  | **597,675.00** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **fitting type** | **diameter(")** | **no of fitti** | **unit price** | **total** |
| 1 | socket | 4 | 444 | 1000 | 444,000.00 |
| 2 | union | 4 | 89 | 1500 | 133,500.00 |
| 3 | elbow | 4 | 120 | 1200 | 144,000.00 |
| 4 | nipples | 4 | 100 | 1200 | 120,000.00 |
| 5 | f.gate valve | 4 | 3 | 3500 | 10,500.00 |
| 6 | Tee | 4 | 15 | 1500 | 22,500.00 |
| 7 | socket | 2½" | 254 | 500 | 127,000.00 |
| 8 | union | 2½" | 51 | 720 | 36,720.00 |
| 9 | elbow | 2½" | 35 | 520 | 18,200.00 |
| 10 | nipples | 2½" | 50 | 480 | 24,000.00 |
| 11 | gate valve | 2½" | 5 | 950 | 4,750.00 |
| 12 | Tee | 2½" | 10 | 480 | 4,800.00 |
| 13 | HDPE union | 2" | 8 | 450 | 3,600.00 |
| 14 | F.adapter | 2" | 4 | 450 | 1,800.00 |
| 15 | gate valve | 2" | 6 | 750 | 4,500.00 |
| 16 | nipples | 2" | 4 | 210 | 840 |
| 17 | HDPE union | 1½" | 32 | 350 | 11,200.00 |
| 18 | F.adapter | 1½" | 10 | 350 | 3,500.00 |
| 19 | nipples | 1½" | 15 | 180 | 2,700.00 |
| 20 | gate valve | 1½" | 8 | 550 | 4400 |
|  | **TOTAL** |  |  | **16840** | **1,122,510.00** |
| **1** | gate valve | 2" | 6 | 550 | 3300 |
| **2** | HDPE union | 2" | 31 | 500 | 15500 |
| **3** | F.adapter | 2" | **8** | 450 | 3600 |
| **4** | gate valve | 1½" | 3 | 350 | 1,050.00 |
| **5** | HDPE union | 1½" | 30 | 250 | 7,500.00 |
| **6** | F.adapter | 1½" | 4 | 350 | 1,400.00 |
| **7** | gate valve | 1" | 4 | 240 | 960 |
| **8** | nipples | 1" | 4 | 75 | 300 |
| **9** | HDPE union | 1" | 7 | 150 | 1,050.00 |
| **10** | F.adapter | 1" | 4 | 120 | 480 |
|  | **TOTAL** |  |  |  | **35,140.00** |