# KOUGA LOCAL MUNICIPALITY
# SUPPORTED BY AMATOLA WATER

# KOUGA MUNICIPALITY WATER CONSERVATION AND WATER DEMAND MANAGEMENT PROJECT

## PROJECT IMPLEMENTATION PLAN 2012-14

**NOVEMBER 2012**

**Prepared by**

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## ANNEXURES

# KOUGA LOCAL MUNICIPALITY WATER CONSERVATION AND WATER DEMAND MANAGEMENT PROJECT

## PROJECT IMPLEMENTATION PLAN

## 1 INTRODUCTION

Kouga Local Municipality embarked on the implementing a Water Conservation and Water Demand Management (WC/WDM) strategy aimed at reducing non- revenue water, reduce wasteful consumption, improve system and consumer metering and in this way deliver water to its consumers as cost efficiently as possible in 2011/2012 financial year.

In support of this initiative, the Department of Water Affairs (DWA) has set aside an amount of R1.5 million for implementation of Water Conservation and Water Demand Management (WC/WDM) activities. Amatola Water was approached by Kouga Local Municipality to assist in the development of a Water Conservation and Water Demand Management Project Implementation Plan outlining the WC/WDM activities to be implemented in the project under a 3 year tripartite agreement signed in 2011.

Amatola Water prepared and submitted the project implementation plan to the Kouga Local Municipality and the Department of Water Affairs. Subsequent to the approval of the business plan Amatola Water commenced with implementation of water conservation and water demand initiatives initially focusing in Jefferys Bay and Humansdorp and later extending to other towns. Details of the scope of work undertaken are detailed in this below.

## 2 ASSESSMENT OF BILLING INFORMATION

In commencing WC/WDM activities Amatola Water obtained billing information records from the Kouga Municipality's finance directorate for the period June 2011 to July 2012. These records, which have been summarised in Table 2.1 below, indicate that there are 23077 billing meters on their system.

**Table 2.1: Household consumption brackets per town**

| | CONSUMPTION BRACKETS (July 2011 – June 2012) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0l/day | 1-200l/day | 200-500l/day | 500-1500l/day | 1500-2000l/day | >2000l/day | TOTAL |
| Cape St Francis | 34 | 218 | 153 | 110 | 13 | 21 | 549 |
| Hankey | 211 | 699 | 678 | 639 | 72 | 114 | 2413 |
| Humansdorp | 431 | 1658 | 1647 | 718 | 41 | 61 | 4556 |
| Jefferys Bay | 3250 | 1373 | 1442 | 2628 | 843 | 1909 | 11445 |
| Loerie | 36 | 269 | 130 | 53 | 3 | 8 | 499 |
| Oyster Bay | 71 | 170 | 57 | 30 | 1 | 3 | 332 |
| Patensie | 72 | 292 | 326 | 88 | 7 | 17 | 802 |
| St Francis Bay | 55 | 438 | 573 | 643 | 95 | 207 | 2011 |
| Thornhill | 69 | 99 | 72 | 202 | 5 | 23 | 470 |
| **TOTAL** | **4229** | **5216** | **5078** | **5111** | **1080** | **2363** | **23077** |

Of these 23077 billing meters, 11445 (49.6%) of them are in Jefferys Bay followed by 4556 (19.7%) in Humansdorp.

Out of these 23077 billing meters, 4229 of them record zero consumption. Again a bulk of these zero consumption readings are in Jefferys Bay with 3250 meters (76.9%) and Humansdorp with 431 meters (10.2%), hence the decision to initially commence WC/WDM activities in these two towns.

# 3 INSPECTION OF ZERO CONSUMPTION BILLING METERS & REPLACEMENT OF FAULTY/DAMAGED BILLING METERS

Amatola Water undertook an erf to erf inspection of all the billing meters that recorded zero consumption in Jefferys Bay and Humansdorp. What was achieved in this exercise was that;

All those meters with zero consumption because the erven are vacant were identified and isolated.
All those meters that were found to be faulty were identified and replaced.
In Jefferys Bay a total of 1980 billing meters that showed zero consumption were inspected between 20 February 2012 and 13 July 2012. Of these, 26 were on vacant sites and 83 were faulty and were replaced. The balance, which was 1871 meters, was found to be in working order.

In Humansdorp 529 billing meters that showed zero consumption were inspected. Of these, 8 were on vacant sites and 25 were found to be faulty and were replaced. The balance, which was 496 meters, was found to be in working order.

Outcomes achieved from the meter inspection exercise are the following:
60% of the 3250 billing meters reportedly giving zero consumption (1954 meters) in Jeffreys Bay represents additional revenue that was previously lost to the municipality.
99% of the 529 billing meters reportedly giving zero consumption (521 meters) in Humansdorp represents additional revenue that was previously was revenue lost to the municipality.

Amatola Water has forwarded this meter assessment information to the Kouga Municipality's Technical Directorate, who in turn forwarded it to the Finance Directorate in order for this information to be updated into their financial system and meter reading programme.

Using an average monthly household consumption of 12.05 kl/month for Humansdorp and 31.55kl/month for Jefferys Bay calculated from records presented in Table 2.1 above and applying the 2012/13 tariffs from Kouga Municipality, the income to be derived by Kouga Municipality from reading and billing these previously unbilled meters is tabled below:

**Table 3.1: Estimated Revenue to be earned from billing previously unbilled households**

| Town | Avg. Mnthly h/hold consump. (kl) | 2012-13 Kouga water tariff (R/kl) | No of prev. unbilled/damaged meters | Est. Mnthly Income | Loss in Potential Annual Income | Current Annual Income from water sales (2011-2012) | Potential Gross Annual income |
|---|---|---|---|---|---|---|---|
| Jefferys Bay | 31.35 | 7.88 | 1954 | R482 712.25 | R5 792 547.00 | R9 379 008.74 | R15 171 555.74 |
| Humansdorp | 12.05 | 6.19 | 521 | R38 861.13 | R466 333.56 | R5 436 049.20 | R 5 902 382.76 |
| **TOTAL ESTIMATED MONTHLY INCOME** | | | | **R521 573.38** | | | |
| **TOTAL ESTIMATED ANNUAL INCOME** | | | | **R6 258 880.58** | **R6 258 880.56** | **R 14 815 057.94** | **R 21 073 938.50** |

## 4 BULK INFRASTRUCTURE INSPECTION IN HUMANSDORP

On completion of the meter inspection/replacement exercise in Jefferys Bay, Amatola Water commenced with inspection of the bulk water infrastructure in Humansdorp driven by the high losses in the distribution system. These losses averaged 42 percent per annum.

A number of areas where water was lost in the distribution system were identified in Humansdorp's aging infrastructure including damaged airvalves. Below are photos of some of the findings of the bulk water infrastructure inspection initiative and relevant corrective actions taken.

**Figure 1: Overflowing reservoir with leaking outlet pipes**

**Figure 2: Damaged airvalve**

**Figure 3: Another damaged airvalve**

**Figure 5: Leak found next to coupling on an HDPE pipeline**

**Figure 6: Another leak found on HDPE pipeline**

**Figure 7: Leak on an airvalve on rising main to Kruisfontein**

**Figure 8: Another badly leaking airvalve on rising main to Kruisfontein**

**Figure 9: Another leaking airvalve on Kruisfontein rising main**

**Figure 10: Leaking VJ coupling on the rising main to Kruisfontein**

**Figure 11: Another leaking VJ coupling on Kruisfontein rising main**

The leaks found on the HDPE pipeline have been repaired, the airvalves that were non-operational have been serviced and the overflowing reservoir has had a new float control valve installed. The leaking VJ couplings could have not been repaired, however, due to constraints in the remaining budget and factors limiting access to the pipeline such steep terrain on which this rising main in located.

## 5 PROPOSED WAY FORWARD

Having highlighted the achievements of this water conservation and water demand management project in Kouga Municipality in the 2011/2012 financial year above, it is also the intention of this document to request additional funding for water conservation and water demand management activities in Kouga Municipality for the 2012/2013 financial year in order to continue addressing the remaining outstanding water infrastructure challenges identified in Humansdorp in order to reduce distribution losses. As originally intended the next water conservation and water demand management project will extend to other towns under Kouga DM after work at Humansdorp is completed.

The remaining water infrastructure challenges in Humansdorp include: (See Annexure A - Drg no. 01-2012-AW01)

- Repairs to leaking VJ couplings on the rising main to Kruisfontein
- Repairs to additional non-functional airvalves on the rising main to Kruisfontein
- Construction of meter chambers and installation of water meters on the offtake to P.Z. Meyer TB Hospital and on the inlet to the reservoir supplying Graslaagte village.
- Replace equilibrium valve in the overflowing reservoir supplying Boblok village and repair leaking outlet pipes.
- Replace the four 80mm equilibrium valves in the reservoirs supplying Arcadia.

The prevailing bulk metering environment as understood from the attached meter schematic diagrams highlights the need for additional bulk meters. (See Annexure B - Drg no's. 01–2012-AW02 to 01-2012-AW09) This is essential if a water balance for each of the towns is to be done properly. The bulk water meter requirements are shown in table 5.1 below.

**Table 5.1: Bulk water meter requirements per town**

| Town | Number of bulk water meters |
|---|---|
| Humansdorp | 8 |
| Jefferys Bay | 8 |
| Hankey | 11 |
| Cape St Francis | 6 |
| Patensie | 5 |
| Thornhill | 2 |
| Oyster Bay | 7 |
| Loerie | 3 |
| **TOTAL** | **50** |

The proposed bulk water meters will be housed in a brickwork chamber. (See Annexure C - Drg no. 01-2012-AW10).

## 6 COST ESTIMATE

It is estimated that the project will cost approximately R7.92 million including 10% contingencies, project implementing agency fees and VAT as summarised below. It is envisaged that this project will be treated as a multi-year project split of two years with R4 million being requested for the 2012/2013 financial year and R3.92 million being requested for the 2013/2014 financial year.

**Table 6.1: Cost summary**

| | Town | Description of work | Amount |
|---|---|---|---|
| Construction Costs | Humansdorp | 8 bulk meter chambers, bulk meters and associated interconnecting pipework | R960 000.00 |
| | | Complete the outstanding work identified in Humansdorp | |
| | Oyster Bay | 7 bulk meter chambers, bulk meters and associated interconnecting pipework | R840 000.00 |
| | Hankey | 11 bulk meter chambers, bulk meters and associated interconnecting pipework | R1 320 000.00 |
| | Cape St Francis | 6 bulk meter chambers, bulk meters and associated interconnecting pipework | R720 000.00 |
| | Patensie | 5 bulk meter chambers, bulk meters and associated interconnecting pipework | R600 000.00 |
| | Thornhill | 2 bulk meter chambers, bulk meters and associated interconnecting pipework | R240 000.00 |
| | Jeffreys Bay | 8 bulk meter chambers, bulk meters and associated interconnecting pipework | R960 000.00 |
| | Loerie | 3 bulk meter chambers, bulk meters and associated interconnecting pipework | R360 000.00 |
| **Sub-total 1** | | | **R6 000 000.00** |
| | | 10% Contingencies | R600 000.00 |
| **Sub-total 2** | | | **R6 600 000.00** |
| | | PIA Fees | R1 320 000.00 |
| **TOTAL** | | | **R7 920 000.00** |

## 7 IMPLEMENTATION PROGRAMME

The project is expected to take 24 months to complete the two phases. A detailed implementation programme is attached in Annexure D.

ANNEXURE A - DRG 01-2012-AW01

**SCHEMATIC DIAGRAMS SHOWING IDENTIFIED BUT OUTSTANDING INFRASTRUCTURE CHALLENGES IN HUMANSDORP**

ANNEXURE B - DRG 01-2012-AW02 TO 01-2012-AW09

**SCHEMATICS OF TOWNS IN KOUGA MUNICIPALITY SHOWING POSITIONS OF REQUIRED BULK METERS**

ANNEXURE C - DRG 01-2012-AW10

**DRAWING OF TYPICAL PROPOSED METER CHAMBER**

# ANNEXURE D – Implementation Programme