

REPORT BY THE DIRECTOR: ENGINEERING SERVICES
TO THE HOD MEETING ON 6th MAY 2010

1. **REPORT ON THE REFURBISHMENT WORK DONE ON THE BUTTERWORTH WASTEWATER TREATMENT WORKS [WWTW]**

[File No. 12/2/1/6]

[Author: Director Engineering Services/NLJ/nb]

[IC], [DP]

[Infrastructure Cluster]

PURPOSE

- [a] To report on the work done to improve the dilapidated Butterworth Sewage Treatment Works into a required standard to produce final effluent as per SANS 241.
- [b] To report on recognition received for this sterling work at the Water Institute of SA [WISA] conference held in Durban in May 2010.

AUTHORITY

- The Constitution of the Republic of South Africa, 1996 as amended.
- The Municipal Finance Management Act No 56 of 2003
- The Municipal Structures Act No 117 of 1998

LEGAL/STATUTORY REQUIREMENTS

The Constitution in Sec 152 (1) indicates that the objects of local government are inter alia the provision of services to communities in a sustainable manner, to promote social and economic development and a safe and healthy environment.

The MFMA in section 62 (1) (a) prescribes that accounting officers of municipalities must ensure that the resources of the municipality are used effectively, efficiently and economically.

The Municipal Structures Act defines and assigns powers and functions to ADM as a district municipality.

REASONING/BACKGROUND

Amathole District Municipality (ADM) requested Amatola Water to intervene by managing the Operation and Maintenance of both Water and Sanitation Bulk Services in all the towns in the Amathole District for a 3 year contract period. The first phase entailed

refurbishing of infrastructure and the second phase, managing and operating. Amatola Water formed a team to assess the state of the Water Treatment Works and Waste Water Treatment Works in the Mbhashe and Mnquma regions. The team had put a proposal together to refurbish and upgrade the plants to ensure the plants are capable of producing effluent meeting the SANS 241 compliance requirements.

Activities undertaken to improve/optimize the process are as follows:

Head of Works

Total incoming raw sewage was estimated at less than 1megalitre per day due to 8 sewage pump station which were not properly functioning as no maintenance was carried out. Unattended blocked main sewers were also contributing factors. The total raw sewage inflow after repair works had been done is never less than 5 mega litres per day, which is back to normal flow again.

Before

After



Faulty Flow Meter

New Flow Meter installed

Primary settling tank no. 3

- The complete overhauling of the primary settling tank has been completed which include centre column, scum boards and scum remover.

- New safety rails were manufactured and installed to all 5 primary settling tanks, 5 primary humus tanks and four secondary humus tanks and were all painted yellow and black as per safety requirements.
- All primary settling tank bridge rails were refurbished

Before



After



Biological Filtration Process

Primary bio-filter no.1 and dosing siphon no.1:

- Complete overhauling of primary bio-filter no.1 was done which included replacement of centre column with new main bearing, fiber glass bio filter arms with strong UPVC bio filter arms.
- Complete overhauling of dosing siphon no.1 which included setting thereof as well as both secondary bio-filters and their dosing siphons.

Both secondary dosing siphons were manufactured and installed as the previous dosing siphon was stolen overnight by criminals for selling as these were made of steel:

- Secondary bio-filter no.1 had its fourth arm stolen overnight as well by criminals for selling purposes. All four bio-filter arms were replaced by UPVC in order to avoid theft thereof.
- All four secondary bio filter no.2 arms were replaced with UPVC as they were completely corroded and out of use.



Oxidation, Maturation and Chlorination ponds

The maturation pond and chlorination ponds were broken on the walls due to lack of maintenance and both ponds were also refurbished.

New Chlorination System after Refurbishment

- Previously Chlorination was done using tablets in empty orange bags across the broken wall of maturation pond to the river.
- New chlorination system was also purchased and installed after refurbishment of the water pipeline to the chlorination pond.



New Chlorination System

Closed Digesters

- Closed digester No. 2 was completely blocked and bio augmentation was used to solve the problem.
- The normal dislodging of digester no.2 into the drying beds successfully happened after 4 months of bio augmentation.

Before



After



Sludge Drying Beds

All sludge drying beds were full of dry sludge with grass and weeds on top and not identifiable.

Before



After



Fencing of maturation and chlorination ponds to control future refuse dumping as this was the case before.

- Refuse used to be dumped next to oxidation and maturation ponds and there was no access to take samples of the final effluent from the final pond by vehicle.
- Uncontrolled refuse dumping took place, covering the ponds. Samplers had to travel more than 2km. to fetch samples on foot as access by vehicles was impossible.
- Bulldozers and excavators were hired for about three full weeks to remove the stock-piled refuse next to the ponds. This was done successfully and fencing erected around the ponds, with an access gate.
- The final effluent was polluted by the refuse before, more especially during rains.



Construction of access road for sampling

Access road was constructed with sabunga so as to enable the sampling of final effluent after chlorination, and before discharging into the Gcuwa River.



Offices and ablution facilities

Renovations to offices and ablution facilities for staff.

Before



After



Renovations to store rooms for storage of equipment and tools.

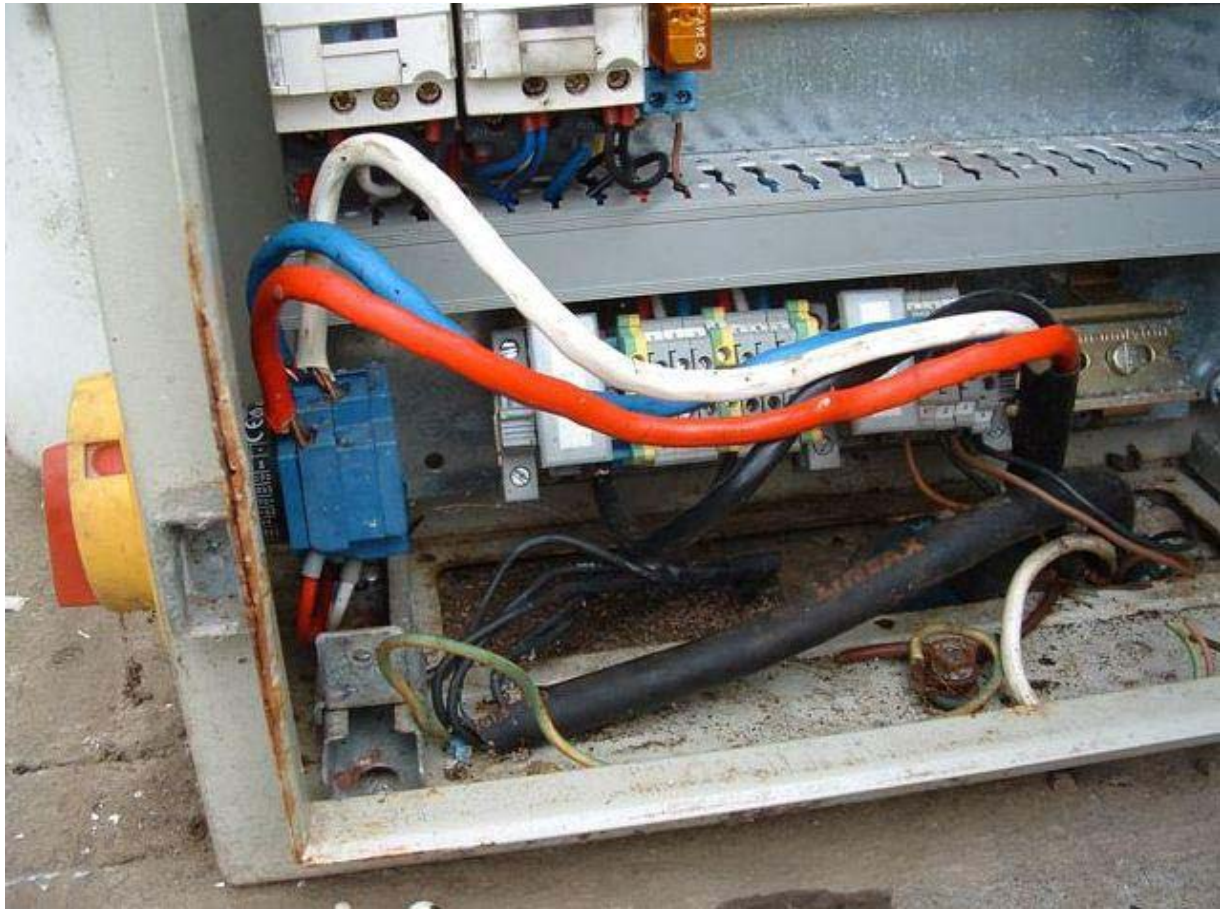
Before



After



PS8 NO ISOLATORS AND NO INDICATION



Training of Plant Operators

Plant Operators at Butterworth Waste Water Treatment Works were sent by Amatola Water to Buffalo City FET College to study theory at NTC 3 level on water and waste water purification. Both Plant Operators at Butterworth waste water treatment works are now qualified and the other two vacant positions are also to be filled by qualified Plant Operators. Amatola Water has selected a total of 68 Learners with grade-12 maths and science from the community where Amatola Water is operating, to study NTC 3 in water and waste water at Buffalo City College. About 58 Learners passed NTC3 in water and waste water purification in November 2009 and now are available for employment as qualified Plant Operators.

RECOGNITION GIVEN TO ADM/AW AT A NATIONAL WATER CONFERENCE

A WISA conference was held in Durban from 18th – 21st April 2010, where ADM/AW won a second place nationally for the best improved wastewater treatment works.

FINANCIAL IMPLICATIONS

No specific financial implications, as this was done under the existing contract between ADM and Amatola Water [AW]. This kind of initiative will be *somehow* expedited in the 2010/11 financial year as ADM has set aside R28.5 million for refurbishment works covering the whole district. However, it should be borne in mind that the AW report dated October 2009, indicated a requirement then of R100 million to refurbish all Water treatment works [WTWs] and wastewater treatment works [WWTWs] they are responsible for – these excluded the WTWs ADM is responsible for and also excluded ageing bulk and distribution pipe lines in all towns.

STAFF IMPLICATIONS

No staff implications as such.

HEALTH AND SAFETY ISSUES: It should be noted that an important part of the refurbishment work done, was improvement of the general health and safety conditions on site, which included renovations to offices and ablution facilities for staff and to store rooms for storage of equipment and tools. General working conditions have also been significantly improved, in compliance with OHSA, to create a safer working environment and to instill pride at the workplace, e.g.:

- New safety rails were manufactured and installed to all 5 primary settling tanks, 5 primary humus tanks and four secondary humus tanks and were all painted yellow and black as per safety requirements.
- All primary settling tank bridge rails were refurbished.

TRAINING INITIATIVES: Plant Operators at Butterworth Waste Water Treatment Works were sent by Amatola Water to Buffalo City FET College to study theory at NTC 3 level on water and waste water purification. Both Plant Operators at Butterworth waste water treatment works are now qualified and the other two vacant positions are also to be filled by qualified Plant Operators. Amatola Water has selected a total of 68 Learners with grade-12 maths and science from the community where Amatola Water is operating, to study NTC 3 in water and waste water at Buffalo City College. About 58 Learners passed NTC3 in water and waste water purification in November 2009 and now are available for employment as qualified Plant Operators.

OTHER PARTIES CONSULTED

Amatola Water Board
ADM supervisors and operators on site.

RECOMMENDATIONS

- [a]** That the report on the improvement and tasks taken to improve the dilapidated Butterworth Sewage Treatment Works into a required standard to produce final effluent as per SANS 241 be noted.

- [b]** That it be further noted that ADM received a national second place award at the WISA Conference held in May 2010, for best improved Sewage Treatment Works.