# **UMZIMKULU BULK WATER AUGMENTATION SCHEME**

## 1. PROJECT NAME

Umzimkulu Bulk Water Augmentation Scheme: Construction of a 27Mł/d Extension to the Bhobhoyi Water Treatment Works

## 2. BACKGROUND

Water demand in the uMzimkhulu water supply catchment has outstripped the existing treatment capacity at Bhobhoyi waterworks due to the expansion of the water supply network to the sprawling rural community with water supply backlogs and increasing demand from the coastal urban strip of the lower south coast. The costal urban strip is the economic hub of the lower south coast region.

The Bhobhoyi Waterworks has a current design capacity of 54 M $\ell$ /day. The treatment capacity has been exceeded is being increased by 27M $\ell$ /d to 81M $\ell$ /day. Tenders for the extension works closed in 2012 and construction commenced in 2014

## 3. PROJECT DESCRIPTION AND LOCATION

## 3.1 Project Description

The capacity of Bhobhoyi Water Treatment works is to be augmented as follows:

- Construction of a new inlet division box complete with lime and polyelectrolyte dosing facilities. The inlet division box will house a sleeve valve to enable on site control of the rate of flow of raw water under gravity from the off-channel storage dam to the treatment works.
- Supply and Installation of bulk chemical storage tanks.
- Construction of a new clariflocculator with a rated capacity of 36Ml/day.
- Demolition of the existing rectangular clarifier (rated capacity of 7,6 Ml/day) and the construction four new rapid gravity filters with a combined capacity of 27 Ml/day on the site presently occupied by the rectangular clarifier.
- Construction of a new chlorine house to house three one tonne chlorine cylinders including a loading gantry, cylinder trolleys, and rails.
- Construction of a new treated water pump station which will draw treated water from the existing circular reservoir and deliver it to the existing header tank on the roof of the Chemical House.
- Construction of a new backwash water recovery pump station to enable all backwash wastewater to be collected and transferred to a sludge treatment facility which is to be constructed in the future.
- Supplying and laying of all interconnecting pipework required for the new water treatment facilities.

- Construction of a building to house a standby generator set.
- Upgrading of first floor of the Chemical House to a Control Room.
- Conversion of part of the Main Building into Change Rooms and Ablutions for Staff.

Construction is undertaken by two separate Contracts, Contract Ugu-07-1127-2012; Construction of a 27MI/day Extension to the Bhobhoyi Water Treatment Works for the civil engineering works and contract UGU-07-1129-2012, Supply and Installation of the Mechanical and Electrical Plant and Equipment for the 27MI/d Extension to the Bhobhoyi Water Treatment works.

When all of the above work has been completed, the Bhobhoyi Water Treatment Works will have a rated capacity of 81 M{/d.

#### 3.2 Project Location

The project area is located at the Bhobhoyi Township within the Ward 20 of the Hibiscus Coast Local Municipality. Bhobhoyi township is some 9 km inland of Port Shepstone, along the N2 Freeway to Harding, on the KwaZulu-Natal Lower South Coast.

### 4. PROJECT DURATION

#### **CONTRACT DATES:**

Commencement Date: 17 June 2014

Completion Date: 17 November 2017

#### 5. PROJECT FUNDING AND COSTING

R 98 151 970,45 (incl VAT)

#### 6. CONSTRUCTION ROLE PLAYERS

- Implementing Agent:
- Consulting Engineer:
- ISD Consultant
- Environmental Control
- Civil Works Contractor:
- Mechanical & Electrical Works Contractor:

Ugu District Municipality Royal HaskoningDHV Nkeshezi Construction Afzelia Environmental Consultants Pilcon Projects PCISA

## 7. CONSTRUCTION STATUS

The fabrication of the mechanical and electrical plant and equipment is complete. The equipment is currently stored off site awaiting the completion of the civil works for installation. The overall construction progress is at 67%. The progress on the construction of the civil works is as indicated below:

Description	Civil Works	
Bulk Chemical Storage Area	100	
Operations Control Room	100	
Inlet Division Box	20	
Clariflocculator No 4	99	
Treated Water Pumpstation suction and delivery	60	
pipework		
Treated water pump station	100	
Backwash water recovery pump station	80	
Genset Building	100	
Diesel Bund	85	
Chlorine House	15	
Rapid Gravity Filters	0	
Roads and Site works	0	

## 8. BREAKDOWN PROJECT COSTING

Description		Cost
Contract Ugu-07-1127-2012: Civil Engineering Works	R	47 109 116.37
Contract Ugu-07-1129-2012: Mechanical & Electrical		
Contract	R	19 700 050.40
Engineering and Construction management and Site		
Supervision Costs	R	19 289 052.92
Subtotal	R	86 098 219.69
VAT	R	12 053 750.76
TOTAL	R	98 151 970.45

### 9. JOB OPPORTUNITIES

The project employed 35 people from the local community. Additional labourers are employed as an when required on the project

## 10. INJURIES / ACCIDENTS

No major injuries have been reported on site.

## 11. CHALLENGES EXPERIENCED

• Extension of the waterworks Boundary

The existing WW boundary was extended and registered with the Surveyor General's office during the design phase. During the implementation phase, a home owner who resides adjacent to the WW requested that the family be re-located at the Client's cost. The family was concerned about their risk exposure in the event of failure of the water-retaining structures.

The water-retaining structure (Clariflocculator) was relocated away from that homestead, within the existing boundary, and construction proceeded without relocating the family. As a result, a delay of 3 months occurred.

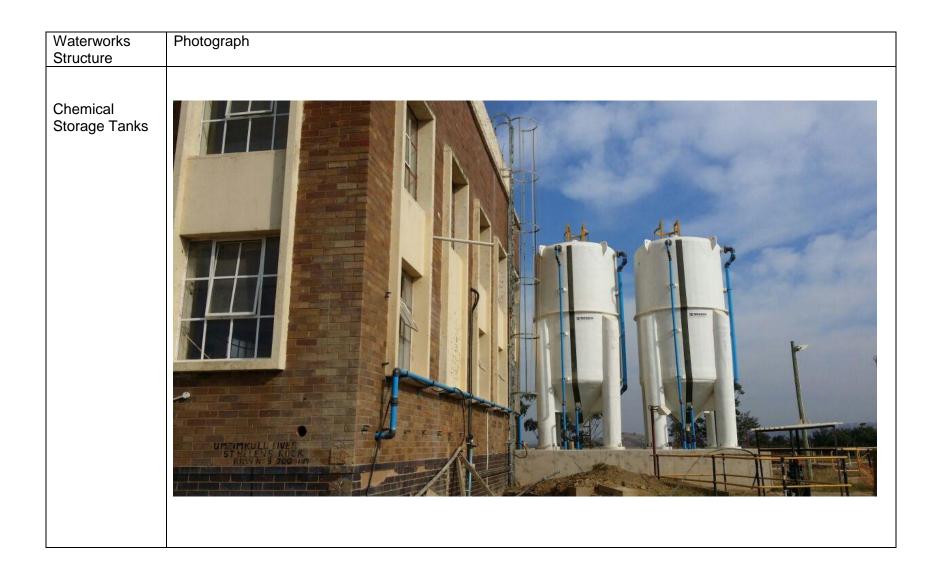
Water Demand

The treatment capacity of 54Ml/day has already been exceeded due to the increased demand from the community. Plant shutdowns to make connections to the existing pipework are a challenge as the system cannot cope with extended shutdown times. The construction team is working closely with the operations team to reduce the impact on the community.

## 12. CONCLUSION

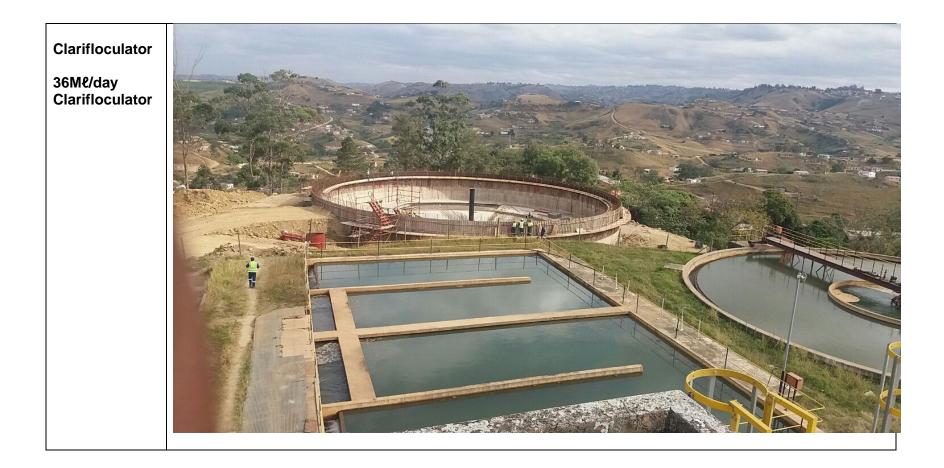
Notwithstanding the challenges highlighted above, the project is being implemented successful. The local community is benefiting from the work opportunities arising out of the construction project. On completion, Ugu District Municipality will be able to extend the water supply network to areas that previously had no clean water and hence further reduce the water supply backlog.

## 13. PHOTOGRAPHS













Treated Water Pumpstation MCC